





























HOISTING THE SIGNAL.



# GREAT ARCTIC TRAVELLERS

A COMPREHENSIVE SUMMARY OF  
ARCTIC AND ANTARCTIC DISCOVERY, AND ADVENTURE

BY HUGH CRAIG  
*Author of "Great African Travellers," Etc.*

WITH PORTRAITS AND OTHER ILLUSTRATIONS



GEORGE ROUTLEDGE AND SONS, LIMITED  
NEW YORK : 9 LAFAYETTE PLACE  
LONDON, GLASGOW AND MANCHESTER

1587  
64

IN UNIFORM STYLE.

---

*History of the United States.*

*History of England.*

*Great African Travellers.*

*Great Arctic Travellers.*

*Life of Napoleon Bonaparte.*

*Out-Door Sports for Boys (and  
Girls).*

Each 160 pages, quarto. With numerous  
illustrations. Boards, lithographed double  
cover, each, 75 cents.

---

GEORGE ROUTLEDGE & SONS, Limited.

NEW YORK : 9 LAFAYETTE PLACE ;  
LONDON, GLASGOW AND MANCHESTER.

COPYRIGHTED, 1891, BY JOSEPH L. BLAMIRE.

6  
1891  
28 July



## INTRODUCTION.

ONE of the most distinct and easily seen groups of stars is that which is sometimes called in this country "The Dipper," but more commonly here and in Europe is known as the "Great Bear." Its well-defined form, and the bright stars which are seen in it, attracted attention in the earliest ages, and it was at once noticed that it, alone of all the other groups of stars, never set in the ocean. It was further noticed by our primitive ancestors that near this Great Bear there was another smaller group of stars, just as many in number, and disposed in very nearly the same figure, but in reverse position, and that around the brightest star of this Little Bear the whole firmament seemed to revolve. As the Greek word for Bear is *Arctos*, this region of the sky, in which the fancy of our earliest forefathers imagined that they could trace among the scattered lights that sparkled there the figures of the Great and Little Bears, was described as Arctic, and the same word Arctic was naturally given to the part of the earth that seemed nearest to the Bear.

When men learned that the world was a globe or sphere, and revolved on its axis, it was seen that if this axis were long enough to reach the heavens, the northern end would pass through one of the stars in the Little Bear; and as this end of the earth's imaginary axis is called *The North Pole*, the star which it would touch if prolonged, was named the *Pole-Star*. The other end of the imaginary axis is called the South Pole, and the portion of the globe surrounding it, and the portion of the heavens above it, receive the name of *Antarctic*, or "opposite to Arctic." On our maps and globes there are—as you know—several circles drawn; the *Equator* cuts the globe in two in the middle, and each side is a circle parallel to the equator called a *Tropic*, and the region of the earth's surface between these circles is commonly

described as tropical, because it is between the Tropics. Two other circles near the two poles are likewise drawn on our globes and maps. They are each distant  $23\frac{1}{2}^{\circ}$  from their respective poles, and they are called the *Arctic* and *Antarctic Circles*. Within each of these circles there is a period of the year when the Sun never sets, and another period when he is never visible. The nearer you travel to either pole, the longer is each successive period, till at the poles themselves a day of six months is succeeded by a night of six months' length.

The Arctic Ocean lies to the north of Europe, Asia, and North America, and surrounds the North Pole. The influence of the Gulf Stream, however, creates a comparatively mild climate off the coasts of Norway, a considerable distance within the Arctic Circle, while on the other hand, along the east coast of Greenland, and through Davis Strait, the Arctic currents bring down the Arctic conditions, a long way into the Atlantic, some distance outside the Circle. The Norwegian Sea and Greenland Sea, lying between Norway and Greenland, belong to the same basin as the Arctic Ocean, being cut off from the Atlantic by ridges stretching between Greenland, Iceland and the Farøe Islands and the North of Scotland, which have an average depth of two hundred and forty fathoms over them. If the Arctic Ocean is considered to lie wholly within the Arctic Circle, then it is almost land-locked between that Circle and the parallel of  $70^{\circ}$  North. It communicates with the Pacific by *Behring Strait*, and with the Atlantic through *Davis Strait*, and the wide sea between Norway and Greenland. The area of the Ocean is about five million five hundred thousand square miles, and about eight million six hundred thousand square miles of land drain into it. The rainfall on this land is estimated at two thousand one

hundred cubic miles a year. The coast of Asia and Europe are low, and have several deep indentations, the principal being the Gulf of Obi and the White Sea; whilst the North American shores are skirted by a most irregular assemblage of islands, forming numerous gulfs, bays and channels, the largest being Baffin's Bay. The principal islands of the Arctic Ocean are Greenland, Spitzbergen, Franz-Josef Land, Nova Zembla, New Siberia, Wrangel Island, Melville Island, Banks Land, Grinnell Land, etc. The principal rivers from Asia are the Lena, Yenesei and Obi; from Europe, the Onega, Dwina and Petchora; from America, the Mackenzie and the Yukon. The Arctic highlands are covered with enormous depths of snow and ice, in many places resulting in the formation of great glaciers, one of the most remarkable of which is the Humboldt Glacier, in  $79^{\circ}$  N. latitude, on the west coast of Greenland. The whole ocean is covered by immense ice-fields, from five to fifty feet in thickness. These are bound together, during the winter, by the severe frost, but break up in summer into *floes* and *floe-bergs*. Sometimes vast sheets of water and long canals are formed between the floes and ice-fields, and these have doubtless given rise to the idea of there being an open sea at the North Pole. When these enormous ice-fields come into collision in winter, their margins are piled up one on the top of the other, and thus produce what are called *hummocky* ice-floes. In the more open parts of the ocean the ice is always moving. Immense quantities of field and hummocky ice float down each year between Spitzbergen and Greenland, and Iceland and Greenland, blocking almost continually these waters. Whole pine-trees are not uncommonly found frozen in this ice, which most probably, have been carried right across the Pole, after having been swept into the Arctic Ocean by the rivers of the two hemispheres. Great fresh-water ponds and lakes are formed on the ice-fields in summer by rain and melting snow. This forms "*black ice*" when frozen, contrasting strongly with "*white ice*" formed from the salt water. The whalers supply themselves with fresh water by picking up the "black ice."

Throughout the whole of the Arctic Basin, ice-cold water is found from surface to bottom, except off the Norwegian shores, where it is met with at depths varying from four hundred to six hundred fathoms beneath the surface. This cold Arctic water penetrates the Farøe Channel at the bottom as far as the North of Scotland, where it is

stopped by a ridge running thence to the Farøe Islands; on the north of this ridge, at a depth of four hundred and five hundred fathoms, there is a temperature of  $30^{\circ}$  F.; while at the south side, at the same depths, the temperature is  $45^{\circ}$  F. The width of this ridge is about ten miles, and on it there is a depth of two hundred and fifty fathoms. The warm Gulf Stream water passes over this ridge, and on by the coasts of Norway, rendering its northern shores and those of Lapland relatively mild and habitable, the July temperature off the North Cape being  $47^{\circ}$  F. The Ocean appears to be shallow to the north of Europe and Asia, the depth, five hundred miles to the north of the Lena, being but thirty-eight fathoms; only seventy-two fathoms are found at the most northerly point of the American coast. Between Spitzbergen and Lapland the depths are from one hundred to two hundred fathoms; but between Spitzbergen and the north of Greenland, there is a deep opening in the frozen sea, where the depth is two thousand five hundred fathoms. Between Norway, Iceland and Greenland the depths are sometimes over two thousand fathoms, and generally in the central parts over one thousand fathoms. The depths in Behring Strait are less than one hundred fathoms. South-westerly winds prevail along the Norwegian Coast and as far as Franz-Josef Land; to the westward of this line, on the American shores, north-easterly winds prevail. In winter, winds blow from Northern Asia to the Arctic Ocean; in summer, from the ocean to the land. The direction of the winds over the Arctic Ocean at different seasons is controlled by the positions of the barometric maxima and minima in the north parts of Asia and the North Atlantic. Fogs and mists are of most frequent occurrence during the six months of day and summer. In winter, the temperature of the air is sometimes as low as  $47^{\circ}$  F., and in summer is usually a little above freezing point.

Such is a brief sketch of what is known at present respecting the Arctic regions, and the difficulties that the explorer has to surmount.

In the Ancient World little was known, and little interest felt in the cold and snow-clad countries of the North. The Greeks had traditions of a people dwelling in the far North, whom they called Hyperboreans, and who were said to dwell on the shores of an ocean that encircled the world. Herodotus, the historian, when he recounts this story adds that as it involves the assumption that the world is round, it need not be seriously dis-



cussed. As long as these views were held by men no attempts at exploration were made, and not till the rotundity of the earth was established, were systematic attempts made to sail around the globe in the Northern waters. The first veritable voyage of discovery to explore the unknown lands of the North was undertaken by a Norwegian named Othere. He was a bold seaman of an adventurous disposition, and seems to have travelled far and wide, and in the course of one of his journeys he came to England and was received by the famous King Alfred. It is supposed by some patriotic souls that Alfred had sent Othere out on his voyage of discovery. This, however, is improbable, and at all events is not at all in harmony with the spirit of those times. Others suppose Othere was a prisoner of war captured at the battle of Ashdown; others content themselves with regarding him as a visitor. It is enough to know that sometime in the twenty-five years of King Alfred's reign, that is, between A.D. 871-896, Othere was in England and spun for the King a lot of what seamen call "yarns." Alfred, who was then engaged in compiling a "History of the World" in the English tongue, reports at length his interview with Othere. Longfellow has told the incident in verse, but, as a curious piece of old-world history, we give the prose narrative, which was as follows:

"Othere told his lord, King Alfred, that he dwelt northmost of all the Northmen. He said that he dwelt in the land to the northward, along the West Sea; he said, however, that that land is very long north from thence, but it is all waste, except in a few places where the Fins at times dwell, hunting in the winter, and in the summer fishing in that sea. He said that he was desirous to try, once on a time, how far that country extended due north, or whether any one lived to the north waste. He then went due north along the country, leaving all the way, the waste land on the right, and the wide sea on the left. After three days he was as far north as the whale-hunters go at the farthest. Then he proceeded in his course due north, as far as he could sail within another three days; then the land there inclined due east, or the sea into the land, he knew not which; but he knew that he waited there for a west wind or a little north, and sailed thence eastward along that land as far as he could sail in four days. Then he had to wait for a due north wind because the land inclined there due south, or the sea in on that land, he knew not which. He then sailed along the coast due south, as far as he could sail in five

days. There lay a great river up in that land; they then turned in that river, because they durst not sail on up the river on account of hostility, because all that country was inhabited on the other side of the river. He had not before met with any land that was inhabited since he left his own home; but all the way he had waste land on his right, except some fishermen, fowlers and hunters, all of whom were Fins, and he had constantly a wide sea to the left."

Othere seems by this account to have reached the river Dwina in Russia. Then for centuries we hear nothing of the Northern seas, and six hundred years had to elapse before Othere found a successor in Hugh Willoughby, the English sailor of Alfred's successor, Edward VI, who sailed from London in 1553 in hopes to reach India by a northern route.

There had always been carried to Europe stories of Indians who had been driven ashore on the western coasts of that continent. Q. Metellus Celer, the Roman Governor of Gaul in the year 62 before Christ, received from the King of the Suevi some Indians, who had been thrown by storms on the shore of Germany. Pope Pius II in his "Cosmography," printed in 1509, writes: "I have myself read that in the time of the German Emperor an Indian vessel and Indian merchants were driven by storm to the German coasts. Certain it is they came from the East, which had not been possible, if, as many suppose, the North Sea was unnavigable and frozen." The Spanish historian Gomara adds that these Indians stranded at Lübeck, in the time of Frederick Barbarossa, who was Emperor from 1152 to 1190. Whatever kind of people these so-called Indians may have been, such stories kept alive the belief that India could be reached by a northern voyage. Now to reach India, the supposed land of gold and diamonds and spices and all sorts of treasures, was, at the close of the middle ages, the longing of all adventurous souls. To reach this fabled storehouse of wealth the Portuguese had sailed south along the African coast and rounded the Cape of Good Hope, and it was with the hope of finding a more direct passage to the golden East that Columbus set sail from Spain. With America discovered by the Spaniards, and with the Portuguese commanding the road round Africa, men began to ponder over these old stories of Indian shipwreck in Germany, and resolved to seek the land of promise by new roads. The first to excite to voyages of discovery in the polar regions was an Englishman, Robert Morse, who had lived for a long time at Seville. He urged his

own King, Henry VIII, in 1527 to undertake such expeditions, as all other countries had been explored by the Spaniards and Portuguese. He argued that after reaching the Pole, one could turn to the East, and first passing the land of the Tartars, get to China, the Indies, the Cape of Good Hope, and thus circumnavigate "the whole world;" he also suggested a north-western route by sailing "along the back of Newfoundland" and returning by the Straits of Magellan. Either of these routes would lie beyond the maritime supremacy of Spain and Portugal, and this is the explanation of the zeal with which the Dutch and English sent out vessels to find India and China by the North-west or North passage. The two famous sailors, John Cabot and his son Sebastian, had set out from England and the former discovered Newfoundland in 1497, and the latter in 1517 reached the expanse of water now called Hudson's Bay. In 1548 he was appointed by King Edward VI superintendent of the Navy, and in 1551 organized in London "The Association of Merchant Adventurers," and under its auspices Sir Hugh Willoughby, a brave soldier, was despatched with a little fleet.

Sir Hugh Willoughby's, in 1553, was thus the first maritime expedition undertaken on a large scale, which was sent from England to far distant seas. The equipment of the vessels was carried out with great care under the superintendence of Sebastian Cabot, who also gave the commander precise instructions how he should behave in the different incidents of the voyage. Some of these instructions now indeed appear rather childish, for instance Article 30: "Item, if you shall see them [the foreigners met with during the voyage] weare Lyons or Bears skinnnes, having long bowes, and arrowes, be not afraid of that sight; for such be worne oftentimes more to feare strangers, than for any other cause," but others might still be used as rules for every well-ordered exploratory expedition. Sir Hugh besides obtained from Edward VI an open letter, written in Latin, Greek, and several other languages, in which it was stated that discoveries and the making of commercial treaties were the sole objects of the expedition; and the people, with whom the expedition might come in contact, were requested to treat Sir Hugh Willoughby as they themselves would wish to be treated in case they should come to England. So sanguine were the promoters of the voyage of its success in reaching the Indian seas by this route, that they caused the ships that were placed at Sir Hugh Willoughby's disposal to be sheathed with

lead in order to protect them from the attacks of teredo and other worms. These vessels were:—(1) The *Buona Esperanza*, admiral of the fleet, of one hundred and twenty tons burden, on board of which was Sir Hugh Willoughby, himself, as captain-general of the fleet. The number of persons in this ship, including Willoughby, the master of the vessel, William Gefferson, and six merchants, was thirty-five. (2) The *Edward Bonaventure*, of one hundred and sixty tons burden, the command of which was given to Richard Chancellor, captain and pilot-major of the fleet. There were on board this vessel fifty men, including two merchants. Among the crew whose names are given in Hakluyt we find the name of Stephen Burrough, afterwards renowned in the history of the north-east passage, and that of Arthur Pet. (3) The *Buona Confidencia*, of ninety tons, under command of Cornelius Durfoorth, with twenty-eight men, including three merchants. The expense of fitting out the vessels amounted to a sum of six thousand pounds, divided into shares of twenty-five pounds. Sir Hugh Willoughby was chosen commander "both by reason of his goodly personage (for he was of tall stature) as also for his singular skill in the services of warre." In order to ascertain the nature of the lands of the East, two "Tartars" who were employed at the royal stables were consulted, but without any information being obtained from them. The ships left Ratcliffe (now best known from Ratcliffe Highway in the east end of London) the 20th of May, 1553. They were towed down by the boats, "the mariners being appareled in watchet or skie coloured cloth," with a favorable wind to Greenwich, where the court then was. The king being unwell could not be present, but "the courtiers came running out, and the common people flockt together, standing very thicke upon the shoare; the Privie Consel, they lookt out at the windowes of the court, and the rest ran up to the toppes of the towers, the shippes did hereupon discharge their ordinance, and shoot off their pieces after the maner of warre, and of the sea, insomuch that the tops of the hills sounded therewith, the valleys and the water gave an echo, and the mariners they shouted in such sort, that the skie rang again with the noise thereof." All was joy and triumph; it seemed as if men foresaw that the greatest maritime power the history of the world can show was that day born.

But alas! for human hopes. The first of Arctic expeditions was the first of Arctic failures. A storm



struck the little fleet on the coast of Norway and the *Edward Bonaventure* was separated from her companions. It is supposed that the *Buona Speranza* and *Buona Confidencia* touched at Nova Zembla, and on September 18, put back south and reached East Lapland. Of the further fate of Sir Hugh Willoughby and his sixty-two companions, we know only that during the course of the winter they all perished, doubtless of scurvy. The journal of the commander ends with the statement that immediately after the arrival of the vessel three men were sent south, south-west, three west, and three south-east to search if they could find people, but that they all returned "without finding of people, or any similitude of habitation." The following year Russian fishermen, found at the wintering station the ships and dead bodies of those who had thus perished, together with the journal from which the extract given above is taken, and a will witnessed by Willoughby, from which it appeared that he himself and most of the company of the two ships were alive in January, 1554. The two vessels, together with Willoughby's corpse, were sent to England in 1555 by the merchant George Killingworth. The third vessel, the *Edward Bonaventure*, commanded by Chancelor, had, on the contrary, a successful voyage, and one of great importance for the commerce of the world. As has been already stated, Chancelor was separated from his companions during a storm in August. He now sailed alone to Vardolhus. After waiting there seven days for Sir Hugh Willoughby, he set out again, resolutely determined "either to bring that to passe which was intended, or else to die the death;" and though "certaine Scottishmen" earnestly attempted to persuade him to return, "hee held on his course towards that unknown part of the world, and sailed so farre that hee came at last to the place where hee found no night at all, but a continuall light and brightnesse of the sunne shining clearly upon the

huge and mighty sea." In this way he finally reached the mouth of the river Dwina, in the White Sea, where a small monastery was then standing at the place where Archangel is now situated. By friendly treatment he soon won the confidence of the inhabitants, who received him with great hospitality. From Archangel he proceeded to Moscow, where he was welcomed by the Czar Ivan IV., who urged him to repeat his voyage. In the following year Chancelor again sailed from England for Archangel, but perished on the coast of Scotland on his return voyage in 1556. In 1564, Burrough, who had been in Chancelor's ship the *Bonaventure* in Willoughby's expedition discovered a channel between Nova Zembla and the mainland, and in 1580, the "Merchant Adventurers Company" sent out two ships under Arthur Pet and Charles Jackman. Pet, who, like Burrough, had been with Chancelor, reached the Kane Sea, but found the pack ice too thick for him to force his way through. His report of the difficulties he encountered led to the temporary abandonment of attempts to reach China by the north-east coast.

Willoughby and Chancelor, Burrough and Pet, we see had turned their sight along the coast of Russia, and were the pioneers of the North-east passage. The next bold explorer, encouraged by Jacques Cartier's success in Canada resolved to seek China by the North-west route. This was Martin Frobisher, who had been convinced by the famous Sir Humphrey Gilbert and Richard Mills, that it was no more difficult to find this passage than to discover the Straits of Magellan. Gilbert's argument was that America was an island, the Atlantis of Plato; that Cabot had found an open sea as far north as Labrador, and that a Mexican friar Urdaneta had actually made the passage. It was then no mere prospecting voyage but an expedition with a definite task before it that we have now to relate.





# CONTENTS.

## CHAPTER I.

MARTIN FROBISHER (1577)—JOHN DAVIS (1585).....	I
--	---

## CHAPTER II.

HENRY HUDSON (1609)—WILLIAM BAFFIN (1616).....	12
--	----

## CHAPTER III.

WILLIAM BARENTZ (1596).....	28
-----------------------------	----

## CHAPTER IV.

V. BEHRING AND BEHRING STRAIT (1728).....	34
---	----

## CHAPTER V.

ROSS—PARRY—BACK—RICHARDSON—FRANKLIN—THE SEARCH FOR FRANKLIN....	41
---	----

## CHAPTER VI.

THE SEARCH FOR FRANKLIN—DR. KANE (1852).....	55
--	----

## CHAPTER VII.

DR. HAYES (1860-1869).....	70
----------------------------	----

## CHAPTER VIII.

THE GERMAN EXPEDITION (1869-1870).....	82
--	----

## CHAPTER IX.

THE "POLARIS" EXPEDITION (1864).....	92
--------------------------------------	----

## CHAPTER X.

THE SEARCH FOR THE "POLARIS".....	100
-----------------------------------	-----

## CHAPTER XI.

THE ENGLISH EXPEDITION OF 1875—THE "ALERT" AND "DISCOVERY".....	104
---	-----

## CHAPTER XII.

DISCOVERIES OF THE "TEGETTHOFF" (1872-1874).....	112
--	-----

## CHAPTER XIII.

NORTHEAST PASSAGE—THE "VEGA" (1878-1879).....	125
---	-----

## CHAPTER XIV.

VOYAGE OF THE "JEANETTE" (1879-1881).....	140
---	-----

## CHAPTER XV.

LIEUTENANT GREELY, AND THE FRANKLIN BAY EXPEDITION (1881-1884).....	150
---	-----

## CHAPTER XVI.

NANSEN (1884) AND PEARY (1891).....	161
-------------------------------------	-----

ANTARCTIC EXPEDITIONS.....	164
----------------------------	-----

## CHAPTER XVII.

CAPTAIN WILKES (1840).....	165
----------------------------	-----

## CHAPTER XVIII.

CAPTAIN SIR JAMES ROSS (1840-1843).....	174
---	-----

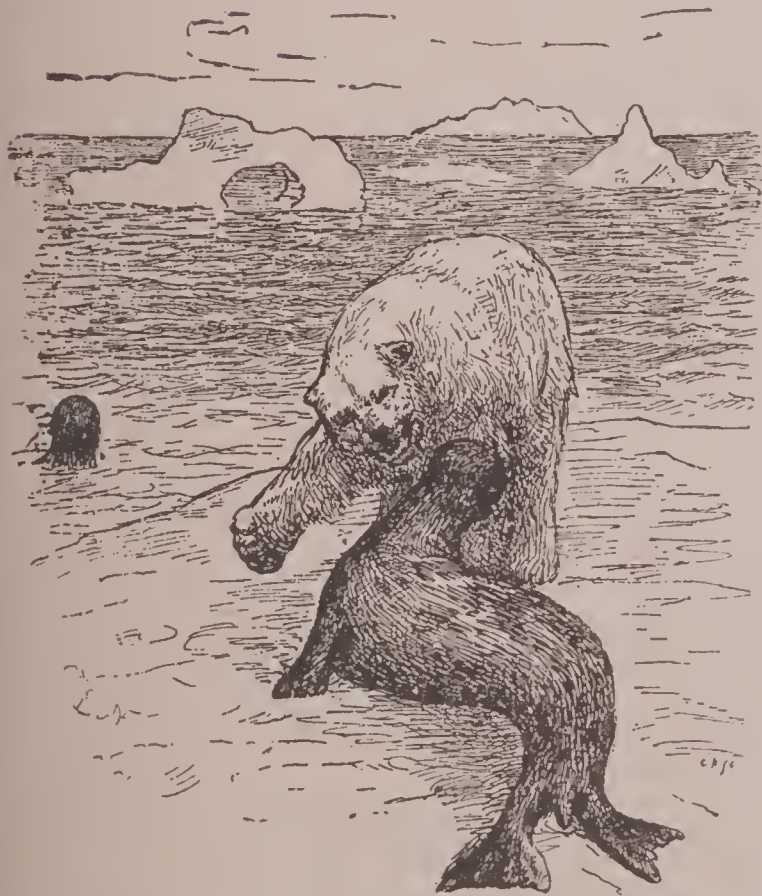




# GREAT ARCTIC TRAVELLERS.

## CHAPTER I.

MARTIN FROBISHER (1577)—JOHN DAVIS (1585).



MARTIN FROBISHER was born in Yorkshire, near Doncaster, about the year 1535, and, as a boy, was sent to sea. After the rough experiences that a lad would undergo in those days, in the unwieldy, ill-provisioned ships of those days, he became a trader and a sailor, and made voyages to the coast of Guinea and elsewhere. As stated in the Introduction, he was strongly impressed by the arguments of Sir Humphrey Gilbert, and became convinced of the possibility of effecting a passage to China and India by sailing a north-west course round the continent of America.

Among his friends was a certain Michael Lok, a merchant of wealth and influence, and ready, like merchants then and now, to enter into schemes that promised to extend his business. Lok was also an indefatigable student of geography, and eagerly recorded the plans of Frobisher, whose adviser and backer he became. Another friend of the Yorkshire sailor was the famous Dr. Dee, the Rosicrucian and Alchemist, who was a good astronomer and well versed in navigation, as well as possessed of great geographical knowledge. The resources, however, of these three friends were unequal to the task of equipping a fleet for such a dangerous and uncertain voyage, and, therefore, they applied to men of wealth in London, and of influence at the court of Queen Elizabeth, and had the good fortune of enlisting in their favor the good will of Ambrose Dudley, the Earl of Warwick. By the pecuniary aid of these supporters, Frobisher was enabled to build and fit out two vessels. They were new ships built expressly for the undertaking, of about twenty tons each, and were called after the Archangels *Gabriel* and *Michael*, and the crew consisted of thirty-five men and boys. In these days of ocean steamers of three thousand and four thousand, and even seven thousand tons, we can hardly realize that men set out to cross the Atlantic and to penetrate into unknown seas, in vessels not much larger or more seaworthy than the cat-boats and pleasure boats we see on your bays and rivers in the fine days of summer.

It was with means thus feeble that the intrepid navigator went to encounter the ice in localities which had never been visited since the time of the Northmen. Setting out from Deptford on the 8th of June, 1576, he sighted the south of Greenland, which he took for the

Frisland of Zeno. Soon stopped by the ice he was obliged to return to Labrador without being able to land there, and he entered Hudson's Straits. After having coasted along Savage and Resolution Islands, he entered a strait which has received his name, but which is also called by some geographers Lunley's Inlet. He landed at Cumberland, took possession of the country in the name of Queen Elizabeth, and entered into some relations with the natives. The cold increased rapidly and he was obliged to return to England. Frobisher only brought back some rather vague scientific and geographical details about the countries which he had visited; he received, however, a most flattering welcome when he showed a heavy black stone in which a little gold was supposed to be found. At once all imaginations were on fire, and

lish sailors— islands of ice a mile and a half in circumference, floating mountains which were sunk seventy or eighty fathoms in the sea—such were the obstacles which prevented Frobisher from reaching, before the 9th of August, the strait which he had discovered during his previous voyage. The English took possession of the country and pursued, both upon land and sea, some poor Esquimaux, who, wounded "in this encounter, jumped in despair from the tops of the rocks into the sea," says Forster in his "Voyages in the North," "which would not have happened if they had shown themselves more submissive, or if we could have made them understand that we were not their enemies." A great quantity of stones, similar to that which had been brought to England, were soon discovered. They were of gold marcasite, and



A RECONNOISANCE.

"this kindled a great opinion in the hearts of many to advance the voyage again."

A company was formed, a charter was granted to Michael Lok and Martin Frobisher, and a second expedition was soon ready for sea. It consisted of three vessels—the *Aid*, of 240 tons, lent by the Queen, the *Michael*, and *Gabriel*. On board the *Aid* were the admiral himself, Martin Frobisher, his lieutenant, George Best, who was the historian of the voyage, and Christopher Hall, the master. The *Gabriel* was commanded by Edward Fenton, with William Smyth as master, and the *Michael* by Gilbert Yorke.

On the 31st of May, 1577, the expedition set sail, and soon sighted Greenland, of which the mountains were covered with snow and the shores defended by a rampart of ice. The weather was bad. Exceedingly dense fogs, as thick as pea-soup, said the Eng-

200 tons of this substance was soon collected. To their delight, the English sailors set up a memorial column on a peak, to which they gave the name of Warick Mount, and performed solemn acts of thanks giving. Frobisher afterwards went ninety miles further on in the same strait, as far as a small island, which received the name of Smith's Island. There the English found two women of whom they took one with her child, but left the other on account of her extreme ugliness. Suspecting, so much did superstition and ignorance flourish at this time, that this woman had cloven feet, they made her take the coverings off her feet, to satisfy themselves that they really were made like their own. Frobisher, now perceiving that the cold was increasing and wishing to place the treasures which he thought he had collected in a place of safety, resolved to give up for the present any further search for the north-west passage. He



then set sail for England, where he arrived at the end of September, after weathering a storm which dispersed his fleet. The man, woman and child, who had been carried off, were presented to the Queen.



ON THE COAST OF GREENLAND.

It is said, with regard to them, that the man, seeing at Bristol Frobisher's trumpeter on horseback, wished to imitate him and mounted with his face turned toward the tail of the animal. These savages were the objects of much curiosity, and obtained permission from the Queen to shoot all kinds of birds, even swans, on the Thames, a thing which was forbidden to every one else under the most severe penalties. They did not long survive, and died before the child was fifteen months old.

The stones which Frobisher had brought back were pronounced by all men to contain gold. Perhaps we attribute the spread of this belief to Dr. Dee, who had long been in search of the philosopher's stone that could change base metals into more precious ones, and who even claimed to have turned into gold a piece of a brass warming-pan. England thought she had found a new Eldorado as rich as that of Spain; merchants and nobles proffered assistance and even Queen Elizabeth herself caught the gold fever. She resolved to occupy the territory to which the name of *Meta Incognita*, "the unknown boundary," was given,

and build there a fort which was to be garrisoned with one hundred men to protect their mines of gold. The one hundred men were carefully selected to form the beginning of a colony; there were bakers to prepare bread, carpenters and masons to build the fort and house, and gold refiners to reduce the ores; in fact, all classes of workmen were enrolled. A fleet of fifteen sail was assembled at Harwich on the 27th of May, 1578, including the *Aid*, commanded by Frobisher himself; the *Judith*, Captain Fenton; the *Thomas Allen*, Captain York; the *Ann Frances*, Captain Best; the *Moon*, the *Gabriel*, and *Michael*, and the *Emma*, a buss of Bridgewater. This time Frobisher took the route down channel, and sighted his supposed Frisland on the 20th of June, to which he gave the name of "West England." He succeeded in effecting a landing, and took

possession in the name of the Queen. Natives were seen, with dogs and tents closely resembling those of *Meta Incognita*. During the voyage whales played around the ships in innumerable schools. It is related that even one of



ICEBERG.

the vessels, propelled by a favorable wind, struck against a whale with such force that the violence of the shock stopped the ship at once, and that the





FISHING THROUGH THE ICE.

whale, after uttering a loud cry, made a spring out of the water and then was suddenly swallowed up. Two days later the fleet met with a dead whale, which they thought must be the one struck by the *Salamander*. When Frobisher came to the entrance of the strait which had received his name, he found it blocked up with ice. "The barque *Dennis*, one hundred tons," says the old account of George Best, "received such a shock from an iceberg that she sank in sight of the whole fleet. Following upon this catastrophe, a sudden and horrible tempest arose from the south-east, the vessels were surrounded on all sides by the ice; they left much of it, between which they could pass, behind them, and found still more before them through which it was impossible for them to penetrate. Certain ships, either having found a place less blocked with ice, or one where it was possible to proceed, furled sails and drifted; of the others, several stopped and cast their anchors upon a great island of ice. The latter were so rapidly enclosed by an infinite number of islets of ice and fragments of icebergs, that the English were obliged to resign themselves and their ships to the mercy of the ice, and to protect the ships with cables,

cushions, mats, boards and all kinds of articles which were suspended to the sides in order to defend them from the fearful shocks and blows of the ice." Frobisher himself was thrown out of his course. Finding the impossibility of rallying his squadron, he sailed along the west coast of Greenland, as far as the strait which was soon to be called Davis' Strait, and penetrated the Countess of Warwick Bay. When he had repaired his vessels with the wood which was to have been used in the building of a dwelling, he loaded the ships with 500 tons of stones similar to those which he had already brought home. Judging the season to be then too far advanced, and considering also that the provisions had been either consumed or lost in the *Dennis*, that the wood for building had been used for repairing the vessels, and having lost forty men, he set out on his return to England on the 31st of August. Tempests and storms accompanied him to the shores of his own country. As to the results of his expedition they were almost none at all, discoveries, and the stones, which he had put on board in the midst of so many dangers, were valueless.

This was Frobisher's last Arctic voyage. We hear but little of him during the next few years, but in 1585 he commanded a vessel in Drake's expedition to the



CHUKCH CHILDREN.

West Indies; did good service in the preparatory task of hampering the designs of Spain, and in the struggle with the Armada covered himself with glory by his conduct in the *Triumph*, and was rewarded by the honor of knighthood. Frobisher next married a daughter of Lord Wentworth, and settled down as a





IN THE ARCTIC OCEAN.



country gentleman, but was soon again at the more congenial task of scouring the seas for the treasure-ships of Spain. At the siege of Crozon, near Brest, in the November of 1594, he received a wound, of which he died at Plymouth on the 22d of the same month.

The next bold explorer of the frozen North was John Davis, whose fame is immortalized by the strait named after him—Davis Strait.

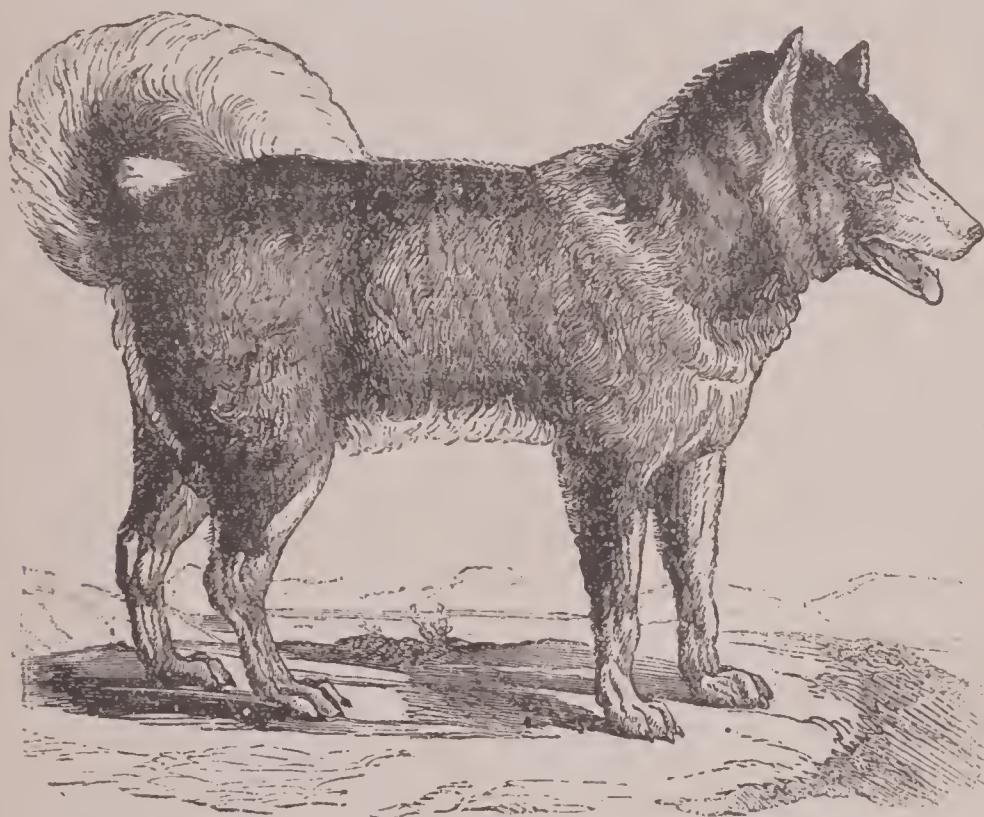
John Davis was born at Sandridge, near Dartmouth, in the year 1550, or thereabouts. Not far from his birthplace was Greenway Court, the home of John and Humphrey Gilbert, who were a few years older than

Adrian Gilbert and John Davys rode homeward into Devonshire," after having had conferences with the learned mathematician on subjects in which they were all deeply interested. This was before the last voyage of Humphrey Gilbert, and his death only inspired the friends with fresh zeal to fulfil his wishes, and take up the great work where he had left it. Sir Walter Raleigh joined them, not only with sympathy and encouragement, but with more substantial aid. Thus were the comrades who had shared in many a boyish adventure along the banks of the Dart, and who had passed so many happy days of their youth speculating

on the wonders of foreign countries, now joined together in a great and memorable enterprise. Then they were boys, full of inquiry and curiosity, who longed for the time when they, too, might add to the renown of England. Their early enthusiasm, aided by capacity for hard work and the desire to do well, had borne rich fruit. Now they were qualified to become the pioneers of English discovery in the Arctic Regions.

The three friends met at Dee's house, near London, on January 23, 1584, and were discussing the project they had formed for seeking the north-west road to China, when a visitor was announced. It was the Secretary of State, Sir Francis Walsingham, who had called on his way down the river to Greenwich. Walsingham was a sedate and cautious man, yet he became so interested in the conversation when it was continued in his pres-

ence, that he expressed a desire to hear the subject of northern discovery discussed before him in all its bearings. It was arranged that there should be a meeting at the house of Mr. Beale, a mutual friend, on the very next day. Accordingly, Dr. Dee, Adrian Gilbert, and John Davis met the Secretary of State on the 24th of January in an interview where, as Dr. Dee tells us, "only we four were secret, and we made Mr. Secretary privy of the North-west Passage, and all charts and rutters were agreed upon in general." Secretary Walsingham was a statesman of wide views and favorable to voyages of discovery, and as a result of this meeting, gave his official countenance to the projected expedition.



ESQUIMAU DOG.

he, while another Devonshire worthy, Walter Raleigh, a half-brother of the Gilberts, was a few years younger. The little river Dart was then frequented by ships from all parts of the world, and sailors who had marvellous tales to tell. The young Davis seems to have gone to sea at an early age, and, as we hear nothing of him till 1579, was probably engaged in long sea voyages. At all events, at that date he was recognized as a captain of skill and courage, fit to be trusted with any enterprise. Like Frobisher, John Davis, as early as 1579, had made the acquaintance of the famous philosopher, Dr. Dee, and had discussed with him the prospects of a northern voyage of discovery. Dr. Dee mentions in his journal that on June 3, 1580, "Mr.



The next point was to interest the wealthy merchants of the City of London in the new attempt to discover a shorter route to Cathay. On the 6th of March John Davis and Adrian Gilbert had an interview with several city magnates, and set forth the commercial importance of the enterprise. Alderman Barne, who was Lord Mayor in 1586, Mr. Towerson, Mr. Yonge, and Mr. Thomas Hudson were the merchants to whom Dr. Dee introduced his friends. The meeting probably took place at Mr. Hudson's house at Mortlake—a circumstance of peculiar interest to Arctic students; for Thomas Hudson is believed, on

merce and the promotion of discovery. He induced the Queen to grant a charter in the names of himself, Adrian Gilbert, and John Davis "for the search and discoverie of the North-west Passage to China." He likewise recommended his companions, William Sanderson, one of the most liberal and spirited merchants of London, and a man of great wealth. He subscribed liberally, advancing the largest part of the funds required, and superintended all the preparations.

The expedition consisted of two small vessels—the *Sunshine*, of London, of fifty tons, commanded by Davis, with William Eston and Richard Pope as his



AN ESQUIMAU HUT.

good grounds, to have been the uncle and guardian of the great navigator, Henry Hudson; so that it is quite possible that the young Henry may have been present when his illustrious predecessor in Arctic discovery met the merchants in his uncle's house.

The next step to be taken by the three adventurers was to induce their old Devonshire friends to join in the enterprise, and they were successful in obtaining subscriptions both at Dartmouth and at Exeter. Sir Walter Raleigh entered into their plans with characteristic ardor. He received the honor of knighthood in the end of 1584. He was rapidly becoming wealthy through the lucrative appointments and gifts conferred upon him by the Queen, and he spent his fortune nobly in schemes for the advancement of com-

merce and the promotion of discovery. He induced the Queen to grant a charter in the names of himself, Henry Davy and William Crosse as gunner and boatswain, and Mr. John Janes as merchant and supercargo. The crew consisted of a carpenter, eleven seamen, four musicians, and a boy. The *Moonshine* was commanded by William Bruton, with John Ellis as master.

On the 7th of June, 1585, they sailed from Dartmouth Harbor, but, owing to fogs and contrary winds, were not well out at sea before July 1st. Schools of porpoises played around the ship, and some were harpooned and eaten, and whales in immense numbers were seen.

At the end of three weeks the coast of Greenland was very near. On the 19th of July, the sea being calm and a dense mist obstructing the view, "a

mighty great roaring" was heard. The captain of the *Moonshine* was ordered to hoist his boat out and go ahead to sound, but there was no bottom at 300 fathoms, though the noise was like the breaking of waves on a beach. Then Davis, taking Master Eston and Janes with him, and ordering the gunner to fire a musket as a signal to show the ship's position at the end of every half hour, pulled away in the direction of the mysterious noise. He soon found that the ships were close to a stream of pack-ice, and that the noise was caused by the large pieces grinding together. He returned before nightfall, with his boat laden with ice, which made excellent fresh water. Next day the fog rose, and the rugged mountains of Greenland, covered with snow, stood out before them, a wide extent of pack-ice intervening between the ships and the shore. Davis called it the "Land of Desolation," for, as he said, "the irksome noise of the ice and the loathsome view of the shore bred strange conceits among us." He had probably reached the east coast somewhere near Cape Discord. Being almost beset, Davis shaped a southerly course and got clear of the pack. On the 22d he again hoisted out his boat and pulled inshore to examine the ice. Many seals were seen and quantities of birds were on the water, which induced the men to get their lines out, but no fish were caught. The ice prevented a close approach to the land, and when the captain returned on board, he continued his southerly course, intending to round the southern point of Greenland. He rounded the point afterwards called Cape Farewell by Davis, and then steered to the north-west for three days. On July 29th he sighted land where the Danish town of Guthavn is now situated. Here the explorers had their first interview with the Esquimaux. Hearing the shouting and noise, Captain Bruton and Master Ellis, of the *Moonshine*, manned their boat, took the four musicians on board, and hurried either to rescue their chief or co-operate in his attempt to conciliate the natives. When they arrived, Captain Davis caused the musicians to play, while he and his companions danced and made signs of friendship. Ellis was appointed to go down to the water-side and win their confidence, in which he succeeded by carefully imitating their signs. A good understanding had been established before the explorers returned on board that night, and next morning a number of *kayaks* were darting about round the ships, and natives stood on the nearest islands and made signs to induce their visitors to land. Again the boat went on shore, and perfect confidence was established. Five *kayaks* were purchased and specimens of native clothing; the impres-

sion left on the minds of Davis and Janes being that the Esquimaux were a tractable people, whom it would be easy to civilize. Great numbers of seals were seen, and the vegetation, consisting of dwarf willow and birch, and of the berry-bearing *Empetrum nigrum*, was observed.

On the 1st of August, the wind being fair, Davis shaped a north-west course in pursuance of his discovery, sighted the land on the opposite side of the channel in 66°40' N. on the 6th. Here he cast anchor in a place which he called Totnes Road, while a lofty cliff overshadowing the anchorage received the name of Mount Raleigh. The large bay nearly surrounding Mount Raleigh was called Exeter Sound, the point to the north was christened Cape Dyer, and that to the south Cape Walsingham. The explorers had their first encounter with Polar bears under Mount Raleigh. Four were seen from the ship, and the boat was quickly manned by eager sportsmen. Janes, who was on shore, loaded his gun with buckshot and a bullet, and hit one in the neck. It took to the water, and was killed by the boat's crew with boar spears, as well as two others; and a few days afterwards another bear was secured after a long and exciting encounter. Dwarf willows were found on shore, and a yellow flower which they took for a primrose.

The next service performed by the expedition was the examination of Cumberland Gulf. The northern point of the entrance was named the Cape of God's Mercy, and the two ships went up the gulf, discovering an island in mid-channel. The *Sunshine* sailed up on one side of it, the *Moonshine* took the other channel, and a very complete examination of the gulf was effected, but without sighting the end of it. Various indications inclined Davis to the belief that it was a strait, but a strong north-west wind obliged him to shape a course towards the open sea. On the 23d of August he anchored on the south shore of the gulf, and on the 26th he turned homeward and reached Dartmouth on Sept. 30th. Three days after his arrival he addressed a most hopeful letter to Sir Francis Walsingham. He assured the Secretary of State that "the North-West Passage is a matter nothing doubtful, but at any tyme almost to be passed, the sea navigable, void of yse, the ayre tolerable, and the waters very depe." Davis also pointed out the trade in oil and furs that might be opened with the lands actually discovered.

As soon as the explorer "could take order for his maryners and shipping," he hurried up to London, to give a personal account to the Secretary of State and to Mr. Sanderson, and to induce the adventurers to un-



dertake a second expedition. The merchants of Devonshire subscribed liberally, and owned two of the ships which were fitted out for the new attempt. The exploring fleet consisted of the *Mermaid*, (120 tons), the *Sunshine*, *Moonshine*, and a pinnace called the *North Star*, of ten tons. The conduct of the expedition was again intrusted to John Davis, who sailed in the *Mermaid*, with William Eston again as his master. Richard Pope, who had been master's mate in the

he landed and explored the neighboring country and renewed his acquaintance with the Esquimaux from whom he purchased seals, skins, fish and birds.

On the 4th of July the master of the *Mermaid* discovered a grave on one of the islands, in which several bodies were interred, with a cross laid over them. It is possible that this may have been a relic of the Norsemen, or that the tradition of the use of the cross may have been preserved by the Esquimaux from the



SEALS.

former voyage, now received command of the *Sunshine*, with Mark Carter as his mate, and Henry Morgan as purser. Morgan was a servant of Mr. William Sanderson.

The new expedition set sail May 7, 1586, and on reaching 60° North Latitude Davis sent the *Sunshine* and *North Star* to seek for a passage between Greenland and Iceland, and continued his voyage with his other ships till he sighted Greenland, June 15th. Here

wreck of the Norse colonies. A few days afterwards, Captain Davis went for another long boat expedition up one of the fiords. These fiords run up towards the interior glacier of Greenland for distances of fifty or even a hundred miles. The frowning granite cliffs rise on either side to a great height, while in several places there are breaks where small valleys are formed, bright with mosses and wild-flowers during the short summer. In the far distance an occasional



glimpse is caught of the white gleaming line of the glacier.

When to the southward of Gilbert Sound, in  $63^{\circ} 8'$  N., Davis fell in with an enormous iceberg on the 17th of July. Its extent and height were so extraordinary that the pinnacle was sent to ascertain whether it was land or really ice. The report that it was indeed one gigantic mass of ice floating on the sea, with bays and capes, plateaux and towering peaks, excited great astonishment. Soon other masses began to collect round the ships, while the ropes and sails were frozen and covered with frost, and the air was obscured by fogs. This was the more disheartening because in the previous year the sea was free and navigable in the same latitude.

Progress was checked, and the men began to despond. They came aft very respectfully and advised their general that he should regard the safety of his own life and the preservation of his people, and that he should not, through overboldness, run the risk of making children fatherless and wives desolate. The gallant seaman was much moved. On the one hand he had to consider the welfare of those intrusted to his charge; on the other, he was bound to recognize the importance of achieving the great business on which he was employed: "Whereupon," he tells us, "seeking help from God, the fountain of all mercies, it pleased His Divine Majesty to moove my heart to prosecute that which I hope shall be to His glory, and to the contentation of every Christian mind." After much reflection, he finally resolved that, although the *Mermaid* was a strong and sufficient ship, yet not so serviceable as a smaller vessel for this service, and being also a heavy expense to her owners, he would send her home and continue the voyage in the *Moonshine*.

In pursuit of his search for the hoped for passage, Davis surveyed this western coast from the 20th to the 28th of August, laying it down from the 67th to the 57th parallels of north latitude. He found enormous numbers of birds breeding in the cliffs, which led him to suppose that there must be a similar abundance of fish in the sea. So he hove the ship to for about half an hour, and in that short time the men caught a hundred cod. He then anchored in a roadstead on the Labrador coast, remaining there until the 1st of September. Davis, as was his wont, made an expedition into the interior, and found a wooded country with abundance of game. His people succeeded in bringing down numbers of birds with bows and arrows, and they caught many more cod at the harbor's mouth.

On the 1st of September the *Moonshine* was got under way, and continued to sail along the coast, with fine weather for three days. It then fell calm, and the vessel was brought to with a ledge-anchor in  $54^{\circ} 30'$  N. Again the lines were put overboard, and immense quantities of cod were secured. "The hook was no sooner over the side, but presently a fish was taken." On the 4th, Davis anchored again, having passed a great opening which seemed to offer another hope of a passage. It was probably the Strait of Belleisle; but the wind was dead against him, and he could not enter it. While they were at anchor, men were sent on shore to fetch some fish which had been laid out on the rocks to cure. The place appears to have been somewhere on the north coast of Newfoundland. Finally, on September 19th, he turned his prow homeward. The *Sunshine*, also, which he had dispatched to sail northward, returned safely to the Thames, but the little *North Star* was never heard of.

The explorer addressed a letter to Mr. William Sanderson from Exeter, on the 14th of October. His own ship had brought home a cargo of cod-fish, and the *Sunshine* had on board 500 sealskins and 140 half-skins. He wrote in feeling terms about the loss of the pinnacle. "God be merciful unto the poor men and preserve them, if it be His blessed will." He assured Sanderson that the extensive knowledge he had acquired of the Northern regions had convinced him that the passage must be in one of four places, or else that it did not exist. The evidence that these tentative voyages might be made to pay their expenses by bringing home cargoes of fish, was another encouraging result of this second attempt. Davis had been unprovided with fishing gear, had been obliged to make hooks out of bent nails, and to use his sounding lines to fish with; while his small stock of salt only enabled him to bring home about thirty couple of cod. Yet he had had ocular demonstration of the wonderful abundance of fish on the coast of Labrador.

Although much of Davis's voyage was not in Arctic waters, we have bestowed good space on it, as his reports probably led the way to the whale and seal fishery, and the cod fishery of Labrador and Newfoundland.

This second voyage discouraged Davis's Devonshire friends; they "fell from the action," he says. Sanderson and the Londoners were, however, still confident, and fitted out a third expedition. In this expedition business was a prominent feature. The old *Sunshine* and a twenty ton pinnacle, the *Ellen*, were



prepared for the fishery, while only his own ship the *Elizabeth* was destined for exploration. On May 19, 1587, the three vessels sailed from Dartmouth, and on June 14th, sighted Greenland. Here he changed the disposition of the ships, sending the *Elizabeth* to the fishery, and proceeding himself in the *Ellen*. He sailed along the west coast of Greenland as far as  $72^{\circ} 12' N.$ , the highest point he reached, and here, on June 30th, he saw open water to the north and west. He called it "Sanderson's Hope." On July 2d he met

passed by a very great gulfe, the water whirling and roring as it were the meeting of tides." Thus did Davis point out the way to future important discoveries. His exploratory labors threw the light which marked the way. "He did, I conceive," said Luke Fox many years afterwards, "light Hudson into his strait."

Davis now set out in his little pinnace, the *Ellen*, to meet his consorts who were at the fishery. He did not find them or any traces of them, so once more



SEA-LION.

a "mighty bank of ice" which checked his advance; the weather became foggy, lanes through the ice led to no exit, and it was not till July 24th that he recovered the open sea. Proceeding southward, Davis says in the log: "We fell into a mighty race, where an island of ice was carried by the force of the current as fast as our barke could sail. We saw the sea falling down into the gulfe with a mighty overfal, and roring, with divers circular motions like whirlepooles, in such sort as forcible streams passe thorow the arches of bridges." Mr. Janes in his journal says: "We

steered for home, where he landed September 15th, 1587. What became of the fishing ships is not known, from which fact it has been surmised that they came safely home and sold their fish to good profit.

John Davis was the first scientific explorer. He noted the variation and dip of the compass, took careful observations, defined the coast lines of Greenland, studied the animal life of the north, made a vocabulary of the Esquimau language, and explored Cumberland and Frobisher's or Lunley's Inlets, and discovered the strait now called Hudson's.

## CHAPTER II.

HENRY HUDSON (1609)—WILLIAM BAFFIN (1616).



HENRY HUDSON.

AMONG the men who discussed with John Davis the plans of Arctic exploration we have found that of Henry Hudson. From that time till the year 1607 we hear nothing of him when, under the auspices of the Muscovy Company, he set out to discover a shorter route to China. On April 29th he set sail on board the *Hopewell*, a vessel of eighty tons. His son Jack shared his cabin; William Collins and James Young were the mates, and the crew consisted of eight men. On June 13th, he sighted the east coast of Greenland, and then pushed on to the famous Hakluyt Head of Spitzbergen, where he could find no passage through which he could force his way. In the following year he was sent out again by the same company, and reached Nova Zembla, but again was unable to make further progress. The failure of these two attempts seems to have led the Muscovy Company to withdraw their support from him, and Hudson took service with the Amsterdam Company.

In 1609 Hudson crossed the Atlantic in the *Half Moon*, with a crew composed in equal parts of Dutch and English sailors. He had heard the reports of

Captain Smith, the famous leader of the Virginian colonists, and thought that perhaps a passage to the west might be found more to the south than in the icy seas of the north. He explored Chesapeake Bay, but only to be again disappointed, and then sailed further north, examining the coast for an opening. With the hope of finding the long-sought north-west passage, Henry Hudson, in the *Half Moon*, rounded the point of Sandy Hook, and entered into New York bay. Hence he sailed in his little boat up the noble river which forever will bear his name, till he reached the Catskill region in which, according to Washington Irving and tradition, the ghosts of himself and his men are still dwelling, under the shadow of the Dunderberg. He landed on Manhattan Island, but, owing to disaffection among his crew, had to return to Europe, where he landed in England, November 7th.

Hudson was a sailor of whom it has been said "that never did any one better understand the seafaring profession, that his courage was equal to any emergency, and that his application was indefatigable," and his talents were again called into service by his native country. Sir Thomas Smith and others resolved to fit out another Arctic expedition, and intrust it to Hudson. Davis, it will be remembered, had in his careful survey ascertained the existence of four great openings—Cumberland's Gulf, Lunley's Inlet (identical with Frobisher's Strait), a great opening to which he gave no name, but described it from the conflicting currents that met there as the "Furious Overfall" and the passage of "Sanderson's Hope." Hudson resolved to try his fortune by exploring the "Furious Overfall."

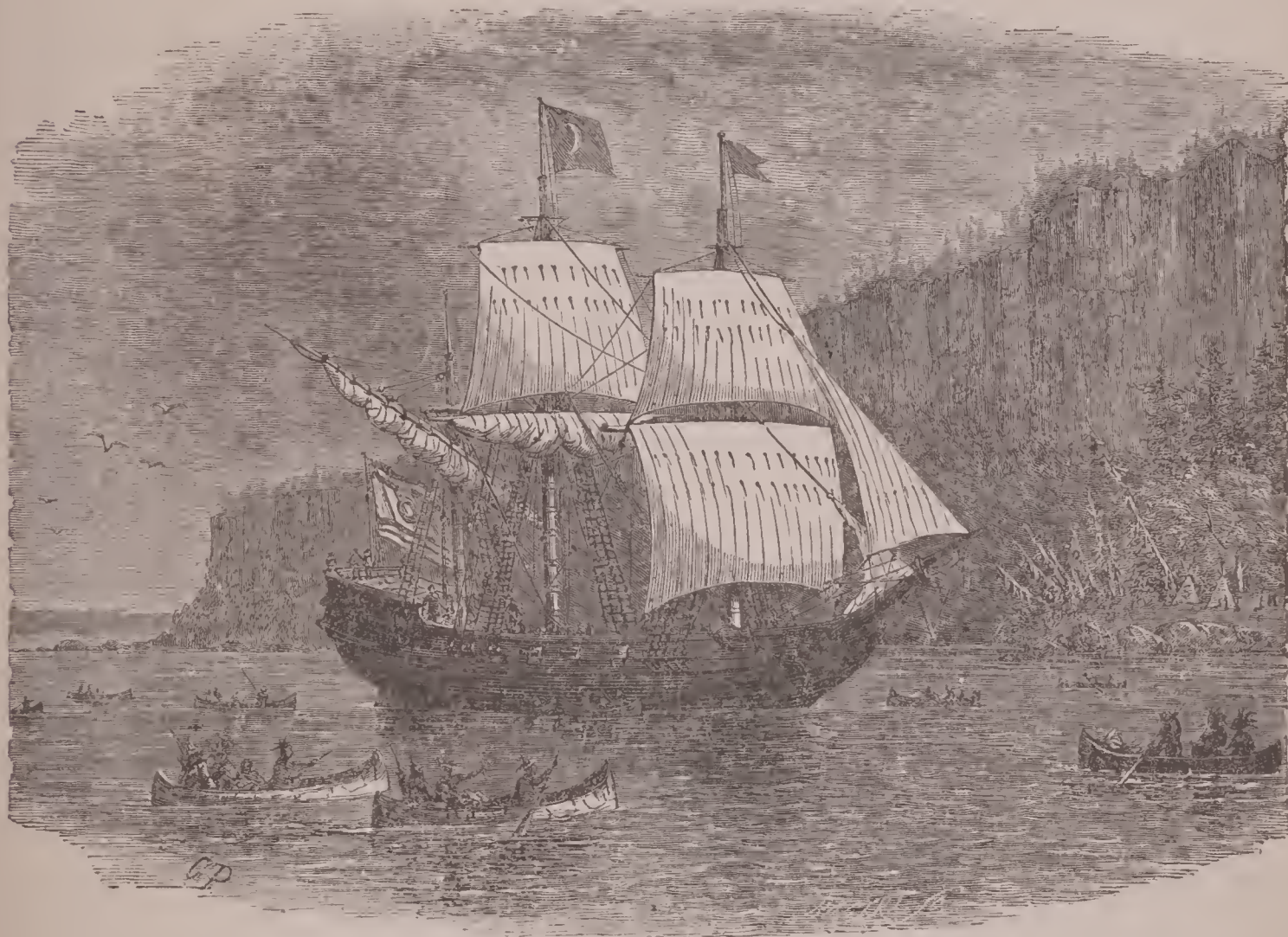
Nothing can be more sad than the story and ending of this last voyage of the gallant Henry Hudson. A ship of thirty-five tons, named the *Discovery*, was provided, and Hudson received the command. Once more his young son Jack, who had reached the age of seventeen years, was his companion. His mate was Robert Juet, a treacherous old man, who had served with Hudson in his second and third voyages. Thomas Woodhouse, a mathematical student; Habakkuk Prickett, a servant of Sir Dudley Digges; Robert Bylot, an experienced old sailor; Arnold Ludlow, and Michael Pierce, were the leading men on board.



Henry Green, a good-for-nothing young spendthrift, befriended by Hudson because he wrote a good hand, was taken on board at the last moment. Sailing from Greenhithe on the 22d of April, 1610, the *Discovery* made a prosperous voyage to Iceland, and thence across the Atlantic. In June, Hudson navigated his ship past the "Furious Overfall," and down the strait which bears his name and leads to the great bay or inland sea, the Mediterranean of America, as it has

fused and unsatisfactory. Hudson's journal ends on the 3d of August, and during the three following months it is not at all clear what he was doing, and what course he took. But on the 1st of November the *Discovery* was in a bay at the extreme south of Hudson's Bay, now called James Bay. She was frozen in and compelled to winter there.

A spirit of mutiny and discontent began to show itself during the long and dreary nights, which was

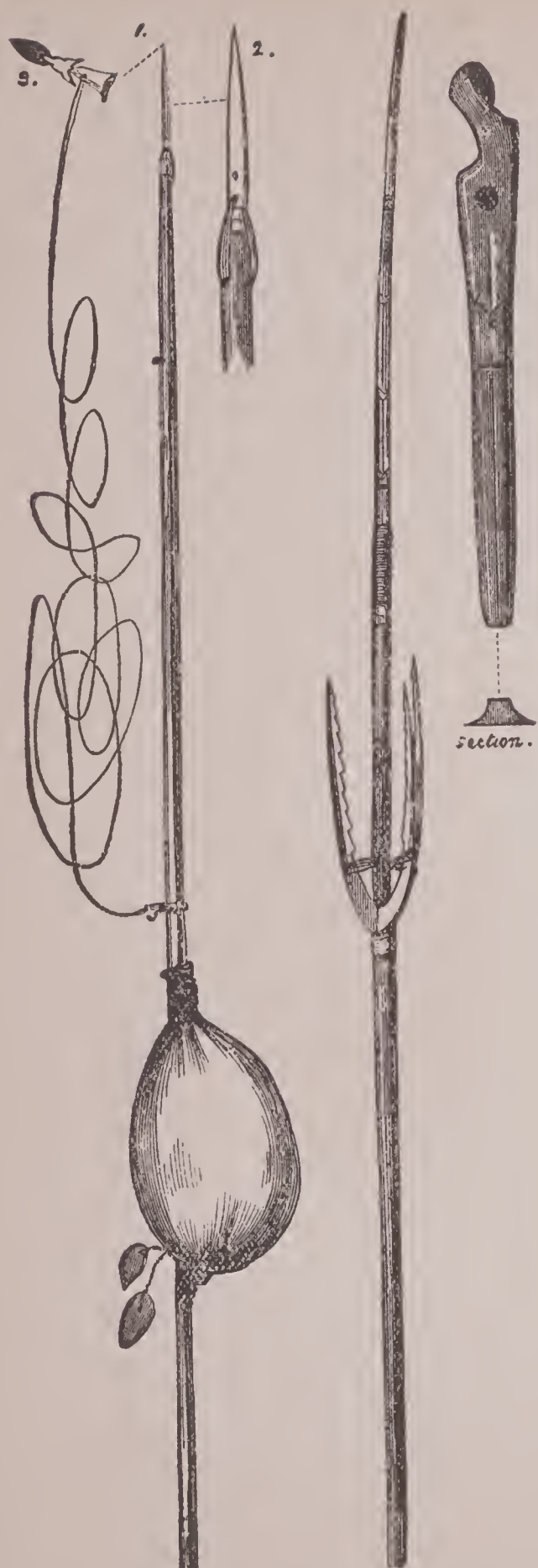


THE "HALF MOON" AT THE MOUTH OF THE HUDSON.

been called, which was ever afterwards to be known as Hudson's Bay. Hudson sailed through the strait, with little or no obstruction from ice, until the entrance to the bay was reached. The island on the south side of the entrance was named Cape Digges, and it was observed that myriads of birds were breeding there. Hudson's own journal unfortunately comes to an end on reaching Cape Digges. The story is continued by Habakkuk Prickett, whose narrative is open to some suspicion, and whose account is con-

increased by privation and hardship, and fostered by two or three designing villains. Hudson had felt obliged to supersede his old shipmate Juet in his rating of mate, and to appoint Robert Bylot in his place, owing to some misconduct. Henry Green was an unprincipled scoundrel, whose enmity against his benefactor arose from the refusal of some trifle for which he had asked. He formed a conspiracy with the boatswain, named William Wilson, and three men, named John Thomas, Michael Pierce, and





HARPOON AND FISH SPEAR.



HARPOON-HEAD.

Andrew Mote. They watched their opportunity. The provisions had run very low, but Hudson hoped to replenish them and to obtain a sufficient supply for the return voyage by salting down birds at Cape Digges. On the 18th of June, 1611, the *Discovery* broke out of her winter quarters, and a course was shaped for the entrance of Hudson's Strait.

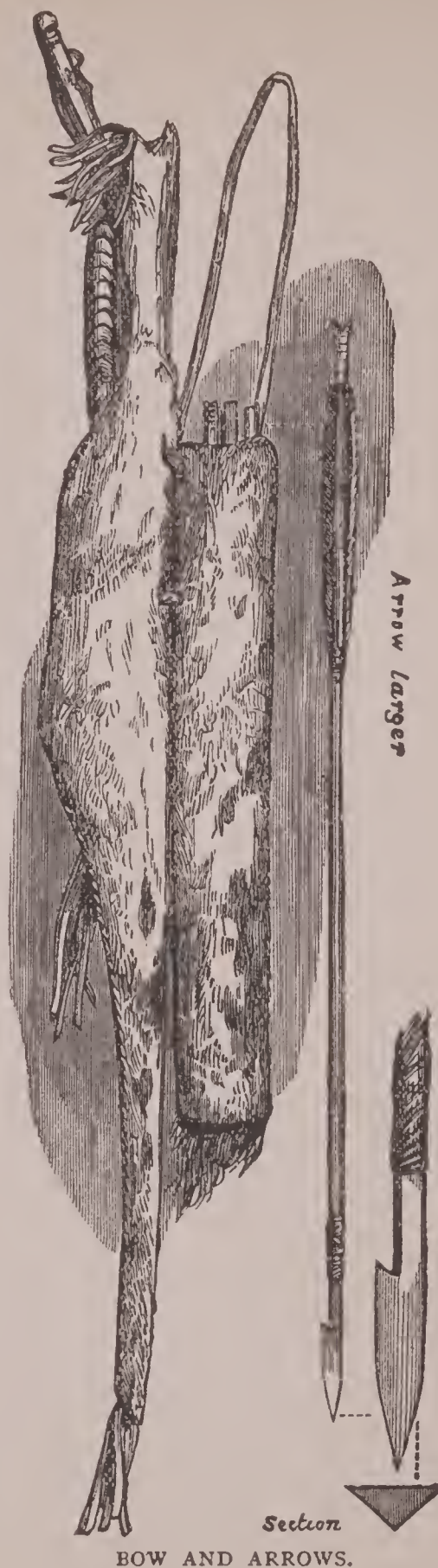
The mutineers thought that there would not be sufficient food to enable them to reach England, and they conceived the diabolical scheme of turning the sick and weak adrift in order to reduce the number of



mouths. As they knew that Hudson would never consent to this villainy, and as they hated their commander because he had enforced discipline and had punished two or more of them, they included him and his son in the number of their intended victims, as well as all who remained loyal. Habakkuk Prickett and five others were in bed with scurvy when the ship broke out of the ice, and a course was shaped northward for Cape Digges.

Prickett tells the story of what took place. He says that Green and Wilson came to his bunk after the ship had been three days at sea, and divulged their plot to him, assuring him that the course they proposed to take was unavoidable, because there were only fourteen days' provisions left in the ship. He declares that he entreated them to desist, at least for a few days, and that he appealed to the old scoundrel Juet the disrated mate, but in vain. Prickett was probably spared because he was a servant of Sir Dudley Digges, one of the owners. The conspirators trusted that he would give a plausible account of the affair on his return home. He never attempted to warn the captain of his danger, and he was evidently a time-serving rascal, upon whom no reliance could be placed.

The day was fixed, and Prickett tells us that the villains passed the greater part of the previous night in whispered talk. At that time of the year, the night was as light as the day. In the morning they stood round the cabin door, waiting for the captain to come out. Hudson was entirely without suspicion. He got up as usual, and on stepping on to the deck he was seized by Thomas and Bennet the cook, while Wilson, the boatswain, tied his hands behind his back. The unfortunate captain must have struggled and called for help, for the carpenter and two other loyal men ran to his assistance. They were overpowered by the mutineers, who got possession of the ship. The shallop was then hauled up alongside. The sick men, including Mr. Woodhouse the mathematician, were pulled out of their berths and forced into the boat. Hudson, as a last hope, as soon as he saw what was intended, called to Prickett to remonstrate with the mutineers. But the time-server kept close in his cabin, and said not a word. The carpenter would have been allowed to remain, but he declared that he would rather die with true men than live as the associate of cowards. He, and the two other loyal men, were forced into the boat with the four sick. Then young Jack Hudson, who had been his father's companion in all his voyages, and was now in his eighteenth year, was taken out of the cabin



and driven into the boat. Hudson followed. The shallop was cast adrift, with nine men crowded into

her, one fowling-piece, some powder and shot, an iron pot, and a little meal.

The ship stood clear of the ice, and then hove to, while the murderers ransacked the captain's cabin. This aroused a hope in the minds of the forlorn people in the boat that the villains had relented. They pulled with all their might, and soon came close to the ship again. But they were doomed to cruel disappointment. As they came up alongside, the mainsail was let run, the topsails were hoisted, and the cowardly rascals fled as if from an enemy. Hudson and his doomed companions were never heard of more.

Eleven men remained on board. Robert Bylot, the mate, was, it is to be hoped, an unwilling spectator of the crime that was perpetrated before his eyes. Juet, the disrated mate, the young scoundrel Green, Moter, Pierce, Thomas, and Wilson were the ringleaders. The cook was an accomplice, as was Francis Clements, a friend of Thomas. Simmes seems merely to have acquiesced, and Pricket was a time-server. On the 29th of July, 1611, the *Discovery* was hove to off Cape Digges, where the birds breed. The five ringleaders of the mutiny went on shore in a boat, to communicate with a party of Esquimaux. They were unarmed. Two were bartering for venison, two were gathering sorrel, and there was a boat-keeper. They were suddenly attacked by the savages, and all were mortally wounded. Tumbling into the boat together she was shoved off. The Esquimaux then began shooting at them with bows and arrows, and Green was killed outright. The rest got back to the ship, but they all died within a few days. Seldom has retribution followed so quickly on the perpetration of crime. They barely survived their victims. Old Juet, who was not on shore with them, died on the passage home.

The survivors were Bylot the mate, who took command, Bennet the cook, Clements, Simmes and Prickett. They shot about 300 birds at Cape Digges, and put themselves on an allowance of half a bird a day, with a little meal. They returned through Hudson's Strait, and shaped a course for Ireland. Soon the meal was exhausted. Bennet the cook kept the bird's bones, and fried them in candle grease. The last bird was in the steep tub when they sighted Dursay Island, and anchored in Berehaven, where a crew was hired to take the ship round to the Thames. Bylot and Pricket hurried up to London, and told the best story they could invent to their employers. No one was punished. Pricket wrote a narrative of the catastrophe. Bylot continued to receive appointments from Sir Thomas Smith and his colleagues. A

younger son of Henry Hudson received employment from the East India Company on the ground that "the father had perished in the service of his country!"

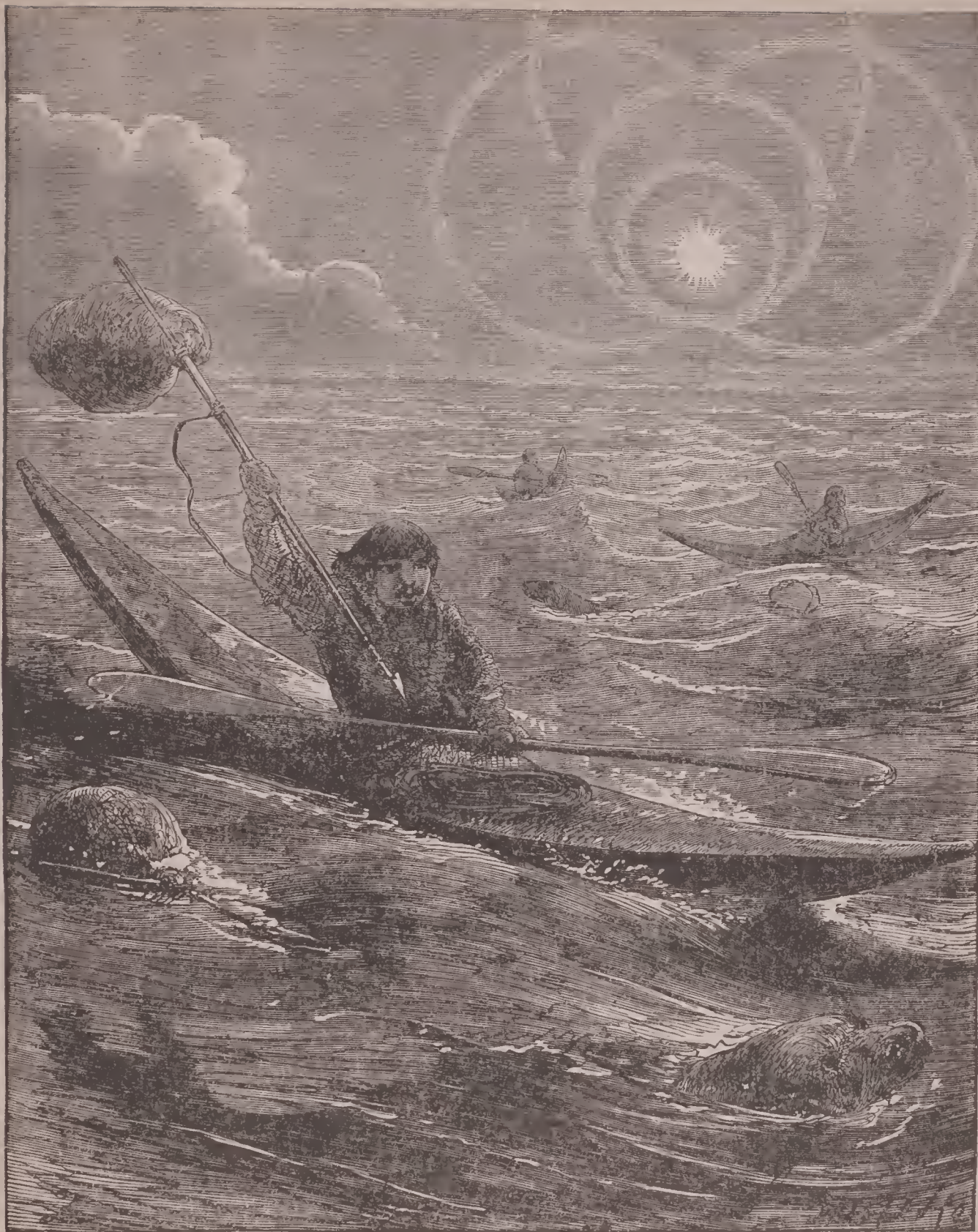
Thus had bold Henry Hudson followed up the beacon light of Davis, reached the strait and bay which immortalize his name, and found a grave in the midst of his discoveries. His labors were appreciated, and it was resolved that an expedition should be dispatched to complete his work in the spring of the following year. Two vessels were fitted out, the *Resolution* and *Discovery*. The command of the expedition was intrusted to Thomas Button, an officer of tried valor and experience; and it was under the special patronage of Prince Henry, who signed the instructions.

Thomas Button was the son of Miles Button of Duffryn in Glamorganshire, whose family had been seated there for seven generations. Young Thomas, who was born at Duffryn, was sent to sea in 1592. He was in the West Indies with Captain Newport in 1603, and commanded a king's ship in 1609. In 1612 he was appointed to lead the new expedition to Hudson's Bay on board the *Resolution*, the *Discovery* being commanded by Captain Ingram. A relation named Gibbons and a friend named Hawkbridge accompanied him, while Bylot and Prickett, the survivors of Hudson's fatal voyage were on board. The ships were supplied with provisions for eighteen months, and in May, 1612, they left the Thames.

The expedition reached Cape Digges without encountering any difficulties from ice in Hudson's Strait, and remained there three weeks in order to put a pinnacle together that had been taken out in pieces. Button then entered Hudson's Bay, and proceeded westward, discovering the southern coast of Southampton Island and off-lying islets, to one of which Button gave the name of Mansell Island, after his relation Admiral Sir Edward Mansell; to another "Cary's Swan's Nest;" to a third, "Hopes Check'd," because there his expectations of making progress received a check. Bad weather came on, and late in August, Button sought refuge in a small creek on the western side of Hudson's Bay, which was named Port Nelson, after the master of the *Resolution*, who died and was buried there. He was thus the discoverer of the west coast of Hudson's Bay, Hudson himself having only sailed down its east coast to the southern extremity.

Button determined to winter at Port Nelson, and at once set his people to work to procure as much game as possible. They obtained a large supply of ptarmi-





ESQUIMAUX SEAL-SPEARING.

gan, but the winter was very severe, and, although they had fresh food, the health of the men suffered from the intense cold. Button kept their minds employed by requiring them to answer questions relating

to the voyage and its objects, and by thus interesting them in the work upon which they were engaged. In June, 1613, the ice broke up, and the ships left their winter quarters and reached Cape Digges. In return-



ing by Hudson's Strait, Button discovered that the land on which Cape Chidley is situated is an island, and he took his ships through the strait which is thus formed. On old maps the island is called Button's Island, a name which ought to have been retained. He returned to England in the autumn of 1613, but his journal was never published. We are indebted to Luke Fox, a later explorer, for all the information that has reached us respecting Button's voyage. He became Admiral Sir Thomas Button, and was in command on the coast of Ireland in 1618. He was Rear-Admiral in the fleet of Sir Edward Mansell, which was sent against the Algerine pirates in 1620, and in 1623 was again employed in suppressing piracy in the Irish Sea. Sir Thomas married Mary, daughter of Sir Walter Rice of Dynevor, and, dying in April, 1634, he left a son who succeeded him at Duffryn. The expedition of Sir Thomas Button to Hudson's Bay was ably conducted. It resulted in considerable additions to geographical knowledge as regards the southern shores of Southampton Island, and in the discovery of the western side of the bay. Button's relation, Captain Gibbons, received command of the *Discovery* in 1614 to follow up the discoveries of his predecessor. But he was unable to enter Hudson's Strait, and was driven by the ice into a bay on the coast of Labrador, where he remained for twenty weeks. His crew named the place "Gibbons his Hole;" and on being released from the ice, he returned home.

The persevering adventurers of London were not discouraged by one or two failures. In 1615 they sent out another expedition, consisting of the *Discovery*, of fifty-five tons, commanded by Robert Bylot, who had served in the three previous expeditions under Hudson, Button and Gibbons in the same ship. William Baffin was his "mate and associate," and the crew consisted of fourteen men and two boys. Sailing in April, 1615, they sighted Cape Farewell on the 6th of May. Crossing Davis Strait, the *Discovery* was safely anchored in a good harbor on the west side of Resolution Island, which is at the northern entrance of Hudson's Strait, on the 1st of June. Bylot was an experienced seaman, and Baffin was a scientific navigator, who lost no opportunity of noting everything that would be useful to his brother sailors, like Davis before him. They had some difficulty with the ice at the entrance of the strait; but eventually sailed along the northern side until they reached a group, which Baffin named the Savage Islands, because they met with a party of Esquimaux on the shore. Continuing a course westward along the northern coast, the *Discovery* was closely beset by the ice off some land

which Baffin named "Broken Point." The ship was immovable for several days, and the men amused themselves on the ice by firing at butts with bows and arrows and playing at foot-ball.

Baffin was very differently employed. He was, like his great predecessor Davis, a seaman who closely studied the scientific branch of his profession, and strove to improve the methods of observing. He was particularly anxious to test the various theoretical methods of finding longitude. While beset in the ice off Broken Point he took a complete lunar observation, and it was the first ever recorded to have been taken at sea, with the doubtful exception of one referred to by Sarmiento. Baffin took altitudes of the sun and moon, and measured the distance between them by the difference of azimuth. He probably adopted this method because he possessed no instrument with which he could measure so large an angle.

On the 27th of June the ice opened out, and the *Discovery* was able to proceed on her voyage, sighting Salisbury Island on the 1st of July. Advancing across the channel they reached a point on the north-west side of Southampton Island, which Baffin named Cape Comfort. Here the ice was packed so close that the attempt to proceed further was abandoned. Moreover, the water began to shoal, and land was seen ahead, which led Baffin to suppose that he was at the mouth of a large bay. When Sir Edward Parry was exploring the same region in 1824, he named the furthest land seen from the *Discovery*, Cape Bylot, and an island on the opposite shore, Baffin Island. They are on either side of the entrance to Frozen Strait, the former on Southampton Island. Passing between Salisbury and Nottingham Islands, which are at the western end of Hudson's Strait, the *Discovery* came to an anchor at Cape Digges on the 29th of July.

The number of guillemots breeding at Cape Digges is almost incredible to those who have not seen it. The crew of the *Discovery* killed about seventy of these birds, but they could easily have shot several hundred if they had been wanted. Bylot and Baffin then shaped a course for England, on their return. Passing down Hudson's Strait without any trouble from ice, they crossed the Atlantic, sighted Cape Clear, and anchored in Plymouth Sound on the 8th of September, 1615, without the loss of a single soul. The conclusion arrived at by Baffin respecting a north-west passage, after his return from this voyage, was, that if there were any passage up Hudson's Strait it was by some narrow inlet, but that the main passage would be up Davis Strait. He was perfectly correct.



The completion of the examination of Davis's route by way of the "Furious Overfall" was steadily progressing, but after the return of Baffin in 1615, there was a pause for sixteen years. At last two voyages were planned, one vessel to sail from the port of Bristol and the other from London. The *Maria*, of seventy tons, under the command of Captain Thomas James, left Bristol on the 3rd of May 1631. James had made no study of previous voyages to the north, entered no seamen acquainted with ice navigation, and

been lost to us. Besides being a thorough seaman and an ardent explorer, he was a quaint and very entertaining writer. If he had a fault it was that he possibly had too good an opinion of himself. He had been zealously urging the dispatch of a new expedition for several years. At length he succeeded in interesting Mr. Henry Briggs in northern discovery, and the great mathematician not only wrote an able treatise on the subject, but also induced Sir John Brooke to join in the venture. A vessel named



ESQUIMAUX DWELLINGS.

when he encountered drifting ice-floes in Hudson's Strait he was quite helpless. At length he reached Cape Digges on the 15th of July.

Luke Fox was a man of a very different stamp. He was a Yorkshireman, clear-headed, intelligent, and full of enthusiasm to advance the cause of Arctic discovery. He made a special and most diligent study of previous voyages, especially of the enterprises of John Davis. It is to Fox that we owe a knowledge of the important expedition of Sir Thomas Button, and of other voyages which would otherwise have

the *Charles*, of eighty tons, was fitted out, provisioned for eighteen months, and manned with twenty sailors and two boys. Old Mr. Briggs died while the ship was being prepared for sea. As the introducer of the use of logarithms he was one of the greatest benefactors the navy has ever had. His place was taken by Sir Thomas Roe, the eminent traveller and diplomatist, who entered heartily into the project, and, with Sir John Wolstenholme, superintended the fitting out of the ship. The Master and Brethren of the Trinity House also gave their help



Captain Fox was perfectly satisfied with his stores and provisions. He tells us that he had "excellent fat beef, strong beer, good wheaten bread, Iceland ling, butter and cheese of the best, admirable sack, and aqua vitæ, pease, oat meal, wheat meal, oil, balsams, gums, unguents, plasters, potions, and purging pills. My carpenter was fitted from the thickest bolt to the tin tack, my gunner from the sabre to the pistol, my boatswain from the cable to the sail twine, my cook from the caldron to the spoon."



GUILLEMOT.

Never was a commander so perfectly satisfied with himself, his crew, and everything on board. It is quite pleasant to read his journal. All was right that had anything to do with him, and his geese were all swans. On the 3rd of May, 1631 this ablest of commanders, with the best of ships, and the most excellent provisions, sailed from Deptford. He dropped his name of Luke, and called himself North West Fox.

But if he was conceited, he had something to be conceited of, and he was an able and accomplished man.

On the 18th of June the *Charles* was nearing her work. Those "overfalls and races of tide," so fully described by Davis, were encountered in the right latitude, and Cape Chidley was sighted on the 20th. Fox was now about to try his turn at following up the beacon-light of John Davis. He found a good deal of ice in Hudson's Strait, as is usual at that time of year, but it was in small pieces floating apart, and was no hinderance to navigation. On the 25th of June the sea was calm, the sky clear, and pieces of spotless ice were floating on the water, a lovely scene when the sun was seen to touch the horizon. Fox was a classical scholar, a careful observer, and he appreciated the beauties of nature. "The sun kist Thetis in our sight," he wrote; "the same greeting was 5° west from the north, and at the same instant the rainbow was in appearance I think to canopy them a bed." Next morning the sun rose clear; "and so continued all this cold virgin day; but now the frost takes care that there shall no more pitch run from off the sunny side of the ship." The *Charles* was beset in the strait for several days, but Fox judged from the appearance of the sky, that the northern side was clear of ice. On the 15th of July, the passage of Hudson's Strait was achieved, and the ship was in sight of the islands at its western entrance, named Digges, Salisbury, Nottingham, Mansell, and Southampton. "They were so named," says Fox, "as a small remembrance of the charge, countenance, and instruction given to the enterprise, and which, though small, neither time nor fame ought to suffer oblivion to bury. For whensoever it shall please God to ripen those seeds, and make them ready for his sickle; he whom he hath appointed to be the happier reaper of this crop, must remember to acknowledge that those honorable and worthy personages were the first advancers." Most true! neither the advancers and liberal merchants who supplied the means, nor the illustrious seamen who made the discoveries, should be forgotten by posterity. It is to them that we owe those solid foundations of national enterprise, and of love for the common weal, upon which the superstructure of the British Empire has been erected by their descendants.

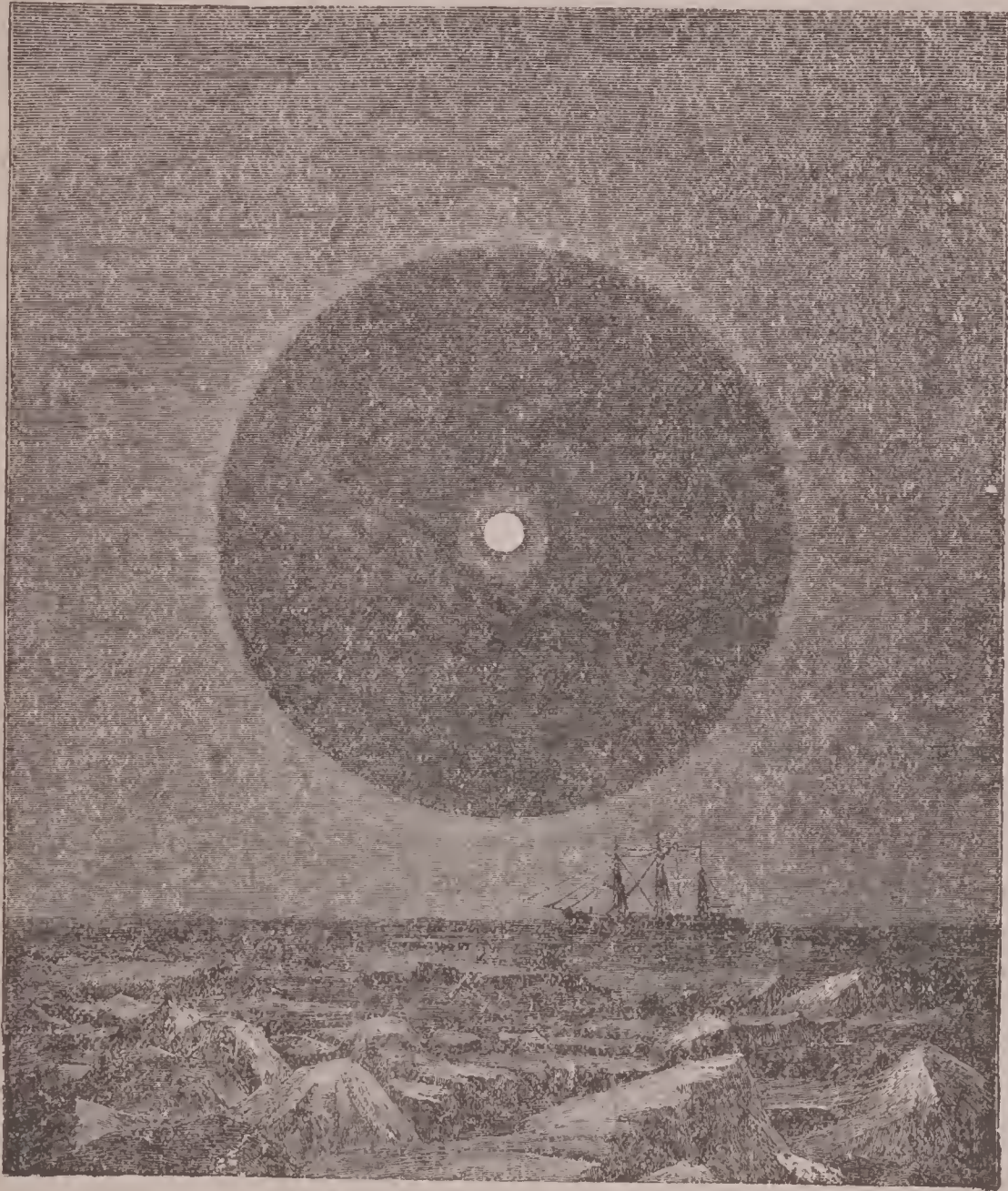
On the 21st of July the *Charles* was off the island named "Cary's Swan's Nest" by Button; and the 27th another island was discovered and named "Sir Thomas Roe's Welcome," in 64° 10' N. This designation has since been transferred to the channel in which the island is situated, and as such it often.



occurs in the narratives of more recent northern voyages.

Coasting round the western shore he gave the names of "Brooke Cobham" and "Briggs his Mathematics" to two other islands, and then he proceeded along the western shore of Hudson's Bay as far south

came to the conclusion that the captain was no seaman. The cabin was so small that they were obliged to dine between decks, and though the ship was only under courses, she took in such seas that "sauce would not have been wanting if there had been roast mutton." "Their ship took its liquor as kindly as them-



MOON WITH HALO.

as Port Nelson, where Button's expedition wintered. No sign of any opening to the westward appeared, and Fox was making his way across Hudson's Bay again when he fell in with the *Maria*, commanded by Captain James, of Bristol, on the 1st of August. Next day Captain Fox dined on board the *Maria*, and had a cordial reception. He found the ship ill-found, and

as Port Nelson, where Button's expedition wintered. No sign of any opening to the westward appeared, and Fox was making his way across Hudson's Bay again when he fell in with the *Maria*, commanded by Captain James, of Bristol, on the 1st of August. Next day Captain Fox dined on board the *Maria*, and had a cordial reception. He found the ship ill-found, and



remarks on the Bristol ship and her crew, which he thus encountered in that solitary sea, and after being with them for seventeen hours he parted company with his rival and stood southward along the land. He established the fact that there was no opening along the western coast of Hudson's Bay from  $65^{\circ} 30'$  to  $55^{\circ} 10' N.$ , a distance 620 miles.

Having completed this examination, Fox steered northward, and was in sight of "Cary's Swan's Nest"



AURORA BOREALIS.

again by the 7th of September. He then proceeded up the eastern side of the coast-line, which trends northward from the western entrance of Hudson's Strait, the whole of which was a new discovery. Passing a headland, to which he gave the name of "Lord Weston's Foreland," Fox reached a point in  $66^{\circ} 47' N.$ , where the land began to trend to the south-east, and this he christened "Fox his Farthest." In after years Sir Edward Parry gave the name of Fox's Channel to the great opening leading to "Fox his Farthest," and our gallant Yorkshireman has this credit down to the present day, that his *Farthest* is still an *Ultima Thule*, and that it has never since been visited by any later explorer.

Fox was sent out because Sir Thomas Button had reported that the tide off Nottingham Island came from the north-west, and that, consequently, there was probability of a passage in that direction. But by careful observations Fox had ascertained that the tide came from the south-east in that locality, and he therefore concluded that he ought to return to England. Parry, in 1824, observed that the tides were rapid and

very irregular, and he had little doubt that this irregularity was caused by a meeting of the tides. The flood comes from the northward down Fox's Channel, and meets the rapid stream which sets in from Hudson's Strait.

On the 21st of September, after having well weighed all considerations which might make it advisable to winter, and the strong reasons against that course, North West Fox decided upon returning home, and

he made sail for England. That morning there was a brilliant sunrise, which gave rise to the following strange conceit from the pen of the old seaman. "This morning Aurora blusht as though she had ushered her master from some unchaste lodging, and the air so silent as though all those handmaids had promised secrecy." With a fair wind the *Charles* ran down Hudson's Strait without any hinderance from the ice, sighting Resolution Island, on the north side of the eastern entrance, on the 27th. She arrived safely in the Downs, without losing a single soul, and with all the crew sound and well. Fox truly claimed that he had "proceeded in these discoveries farther than any of his pre-

decessors, in less time and at less charge; that he cleared up all the expected hopes from the west side of Hudson's Bay;" and, he could now add, he discovered a coast-line on the east side of the channel bearing his name, which has never since been explored or visited.

The cruise of the *Maria* was not so fortunate. After parting company with Captain Fox in Hudson's Bay she struck on a rock when Captain James was in a deep sleep. The ship seems to have been badly handled. The sails were thrown aback, but without effect. They were then furled and an anchor was laid out astern. All the water was started and the coal was thrown overboard. Then all hands went to the capstan and hove round with such good-will that the cable parted. Eventually the ship floated off; and Captain James controlled his passion, and checked some bad counsel that was given him to revenge himself on the officer of the watch. The fault was his own. He ought not to have been in bed and asleep when the ship was so near the land. He found a secure harbor in the extreme south of Hudson's Bay, protected by an island



afterwards named Charlton Island, and there he determined to winter. During October and November it was intensely cold and much snow fell. Yet the country was by no means Arctic in character. There were woods of fir-trees, and the crew was able to cut plenty of fuel. A hut was built on shore for the sick, in which a large fire was kept burning. The first man to succumb to the miseries of the situation was the gunner, who sank gradually in spite of being allowed to drink nothing but sack. The ship was driven on shore, and Captain James caused the provisions to be

with the mainsail. In the inside the bonnet sails formed the walls, and bed places were built round three sides. The hearth was in the centre. A second house was built with the foresail for a roof. A store-house was also constructed to receive all the provisions and stores from the ship. Before Christmas the houses were covered deep with snow.

In February the scurvy began to show itself, and before long two-thirds of the crew were down with it. Thus the miserable winter passed on, and by the end of April the snow had ceased, and rain began to fall.



THE KAJAK AND ITS MANAGEMENT.

landed. But the cold increased, they could not cut vinegar and wine with hatchets, and were in a condition of extreme misery. They were now all collected in a house they had built in the shelter of a wood which they named "Winter's Forest" in honor of Sir John Winter. The house was under a clump of trees, and at a short distance from the beach, where the ship was on shore. It was about twenty feet square, built of upright posts with the sides wattled with boughs, and about six feet high. The roof was of rafters and boughs, the whole covered over

They obtained very few ptarmigan or game of any kind, and lived on the salt beef and oatmeal they had brought from England, with pork, fish, and boiled peas. All the men who were able to move were obliged to work on board, pumping and digging the ice out of the ship. On the 6th of May, John Warden, the master's mate died, and was buried on the summit of a bleak rising ground, which was named Brandon Hill. A few days afterwards the carpenter died, and was interred beside the master's mate. The gunner's body, which had been buried at sea, was found



imbedded in the ice under the gun-room ports. It was dug out and placed in the earth, by the side of his shipmates on Brandon Hill. As the weather got

already mentioned in the voyage of Captain Bylot, whose mate he was on board the *Discovery*. This great sailor whose courage is commemorated in the expanse of water named Baffin's Bay is believed to have been born in London about the year 1584. In 1612 he had been pilot on the *Patience* of Hull, that sailed from that port to explore Greenland; in 1613-14, he had been engaged in the whale fishery near Spitzbergen, as above stated, was with Bylot in the voyage of the *Discovery* in 1615. He was a man of enthusiastic zeal, mild and genial in manner, and a skilful and scientific navigator. He was well trained by his previous experiences in the ice.

The voyage of 1616 was undertaken by Sir Thomas Smith, Sir Francis Jones, Sir Dudley Digges, and Sir John Wolstenholme. As before, Robert Bylot was appointed master, and William Baffin again became pilot of the

warmer the work of refitting the ship advanced. Captain James became more hopeful; he hoisted the ensign on the birthday of the Prince of Wales, and called the place Charlestown, which, by contraction, became Charlton Island. By the 8th of June the water was pumped out of the ship, but she was aground in the sand, and it was necessary to lighten her by taking out all the ballast, in order to get her afloat. This operation was successfully performed, the ship was rigged, and the stores were brought on board. As the snow disappeared, vetches and scurvy-grass were found in considerable quantities, which conduced to the recovery of the sick.

On the 1st of July, 1732, Captain James took a last look at the graves of his companions, and returning to the ship, made sail for Bristol, where he arrived safely in September.

Let us now trace the expeditions that sought for the North-west Passage by another of the routes indicated by Davis, the road by Sander-son's Hope. The name of William Baffin has been

*Discovery*, of fifty-five tons, with a crew of sixteen men. Baffin's papers and maps fell into the hands of Purchas, who published, in his "Pilgrimes," the



MELVILLE BAY.



NARWHAL.

great navigator's "Briefe and True Relation," and his letter to Sir John Wolstenholme. But Purchas omitted Baffin's priceless map and his journal, thus



doing an irreparable injury to posterity. They are now lost, although it is probable that the very rare map met with in a few copies of the narrative of Luke Fox, may be partly taken from the work of Baffin.

The *Discovery* sailed from Gravesend on the 26th of March, 1616, and shaped a course down channel; but a westerly wind coming on, she put into Dartmouth Harbor, and remained there for eleven days. Thus was the ship destined to carry forward the discovery of Davis beyond his furthest point, receiving shelter in the harbor which was in sight of the home he had loved so well. The successors of Davis left Dartmouth on the 15th of April, a month earlier than Davis had usually sailed from the same port. The first land they saw was the coast of Greenland near Cockin Sound, in  $65^{\circ} 20' N.$ , where Baffin had been in his first Arctic voyage with James Hall, in 1612. Several Esquimaux in their *kayaks* came round the ship, and were given small pieces of iron; but Bylot and Baffin did not wish to anchor so early in the voyage, having made a good passage across the Atlantic. The wind was against them, and they worked up to the northward until they reached  $70^{\circ} 20' N.$  "Then we came to an anchor in a faire sound near the place Master Davis called London Coast. This was probably near Noursoak, on the north shore of the Waigat, or strait dividing Disco Island from the mainland of Greenland.

At sunset on the 22d of May the *Discovery* left her anchorage in the Waigat, after a stay of two days, during which Baffin diligently observed the tides. These tidal observations gave rise to some apprehension respecting the passage, for the rise and fall was

only eight or nine feet, the flood coming from the south. Working up against a dead foul wind the old craft made but slow progress, and encountering a dead whale far out at sea, some time was spent in getting the whalebone on board. But by sunset of the 30th they were fairly in sight of Sanderson his Hope, "the farthest land Master Davis was at," on



SPEARING THE WALRUS.

the 30th of June, 1587, an interval of nearly thirty years. Pushing through some loose ice, they came among islands, where Baffin and his crew had pleasant relations with some Esquimaux lasses, showing them the ship, and helping them to go from one island to another, in search of their men folk. They called the group "Women Islands," a name it still retains.



From the "Women Islands" Baffin passed on to the group now called "Baffin Islands;" but finding much ice along the coast, the bold pilot steered westward, and took the perilous course of attempting the middle pack. Parry succeeded in passing through it in 1819, and Nares in 1875, but there is great danger of being beset and drifted southward. It is always safer to keep near the shore. "Stick to the land-floe!" was the favorite maxim of experienced whaling captains. Baffin came to the same conclusion. After a short trial of the middle pack he resolved to keep near the land; and on the 15th of June he anchored in Melville Bay, under the lee of some islands off the point now called Cape Shackleton, which is 1,400 feet high, and nearly perpendicular. Here the ship was visited by Esquimaux in *kayaks* and *umenaks*, who exchanged narwhals' horns for pieces of iron and glass beads. Baffin, therefore, called the place Horn Sound, a name which ought to be restored on modern maps, just north of Cape Shackleton, where there is a cliff frequented by guillemots.

In the last days of June the *Discovery* made the passage of Melville Bay, since so much dreaded by whalers, with little or no obstruction from the ice, and by the 1st of July she had reached the "north water." Baffin named a fair headland Cape Dudley Digges, in  $76.8^{\circ}$  N., and a deep bay twelve leagues farther north was called Wolstenholme Sound. Here the little vessel was anchored; but in a few hours she was driven out to sea, the gale increased, her foresail was blown out of the bolt-ropes, and when the weather cleared they found themselves imbayed in another deep sound, where they anchored. Seeing several whales, they gave it the name of Whale Sound. The wind soon moderated, and the *Discovery* continued her adventurous course along this far northern land, until she was stopped by the ice in  $78^{\circ}$  N., when in sight of an opening named Smith Sound, "the greatest and largest in all this bay." An island between Smith and Whale Sounds received the name of Hakluyt Island. Here the *Discovery* was again anchored, in the hope of finding whalebone on the shore. But again the wind and sea rose, and they were driven from their shelter, to beat about for two days in the "north water" of Baffin's Bay. When the weather cleared up, they sighted a group of islands, which received the name of Cary Islands, after the ship's captain, Mr. Alwyn Cary.

Baffin stood to the westward in an open sea, with a stiff gale of wind, until the 10th of July, when it fell calm. The *Discovery* was now on the western side of the bay, and an opening was in sight which received

the name of Jones Sound. Here a boat was sent on shore, and many walrus were seen on the rocks, but a fair wind springing up, no attempt was made to kill them. Running southward another opening was discovered in  $74^{\circ} 30'$  which was called Lancaster Sound in honor of the eminent director of the East India Company who had commanded the first English voyage to the East Indies. Too hastily assuming this and other sounds to be merely bays, Baffin ran southward along the western coast of Davis Strait for ten days, and then standing eastward, after some difficulty from large floes of ice, succeeded in reaching the west coast of Greenland again, and anchored in Cockin Sound. Several of the crew had been attacked by scurvy, and the cook had died. But such quantities of sorrel and scurvy grass were now gathered and administered to the sick, that in ten days they were all in perfect health again. Leaving Cockin Sound on the 6th of August, the *Discovery* had a prosperous voyage home, and on the 30th of August anchored off Dover.

Thus was the wish of Davis accomplished. His discovery as far as Hope Sanderson was extended by his successor, and the whole of Baffin's Bay was added to geographical knowledge. It is pleasant to feel that Baffin venerated the memory of his illustrious predecessor. He always mentions him with respect, and in his letter to Sir John Wolstenholme he generously says: "Neither was Master Davis to be blamed in his report and great hopes; for as far as Hope Sanderson the sea is open, of an unsearchable depth and good color." Baffin's conclusion was that "there is no passage nor hope of passage to the north of Davis Strait." But Baffin was wrong, and Davis was right. In the distant future the wishes of Davis received further development, and Davis Strait proved to be the way to further important geographical discovery, westward and northward by Lancaster Sound, and by Smith Sound, openings which Baffin had erroneously supposed to be merely bays.

After 1616, Baffin, in order to obtain suitable employment, was obliged to enter the service of the East India Company. But when he found himself under this necessity, it is extremely interesting to find that, like Davis before him, he never abandoned the hope of continuing his northern discoveries. He even conceived the very same scheme which Davis so long entertained, namely, of making the northern passage by way of the Pacific. Mr. Briggs, in his "Brief Discourse on a North-west Passage," says that Baffin told him "that he would, if he might get employment, search the passage from Japan, by the coast of Asia, any way he could."





WALRUS.



The most agreeable method of acquiring a knowledge of Arctic geography is by the contemplation of the life of a great explorer. For by this biographical method, each coast and island, each bay and strait, is connected with some incident in the life-story of the discoverer or of his successors. Interest is thus given to what would otherwise be a mere list of names and life is breathed into the inorganic mass. A knowledge of the lives of John Davis and of his immediate successors, requires an intimate acquaintance with Davis Strait and its shores, with the east and west coasts of Greenland, with the Hudson River, Hudson Strait and Bay, and with Baffin's Bay; in

short, with all the nearer regions of Arctic America. It is desirable that the student should be conversant with the achievements of Arctic worthies in other parts of the world; because he should contemplate the complete life-stories of his heroes, and thus realize how, and by the possession of what qualifications their Arctic work was done. The thorough and complete grounding which such a study supplies is the best preparation for an examination of the labors of modern explorers and of the results of their work, which will include the acquisition of an intelligent knowledge and appreciation of the geography of the whole Arctic Regions.

## CHAPTER III.

WILLIAM BARENTZ—1596.

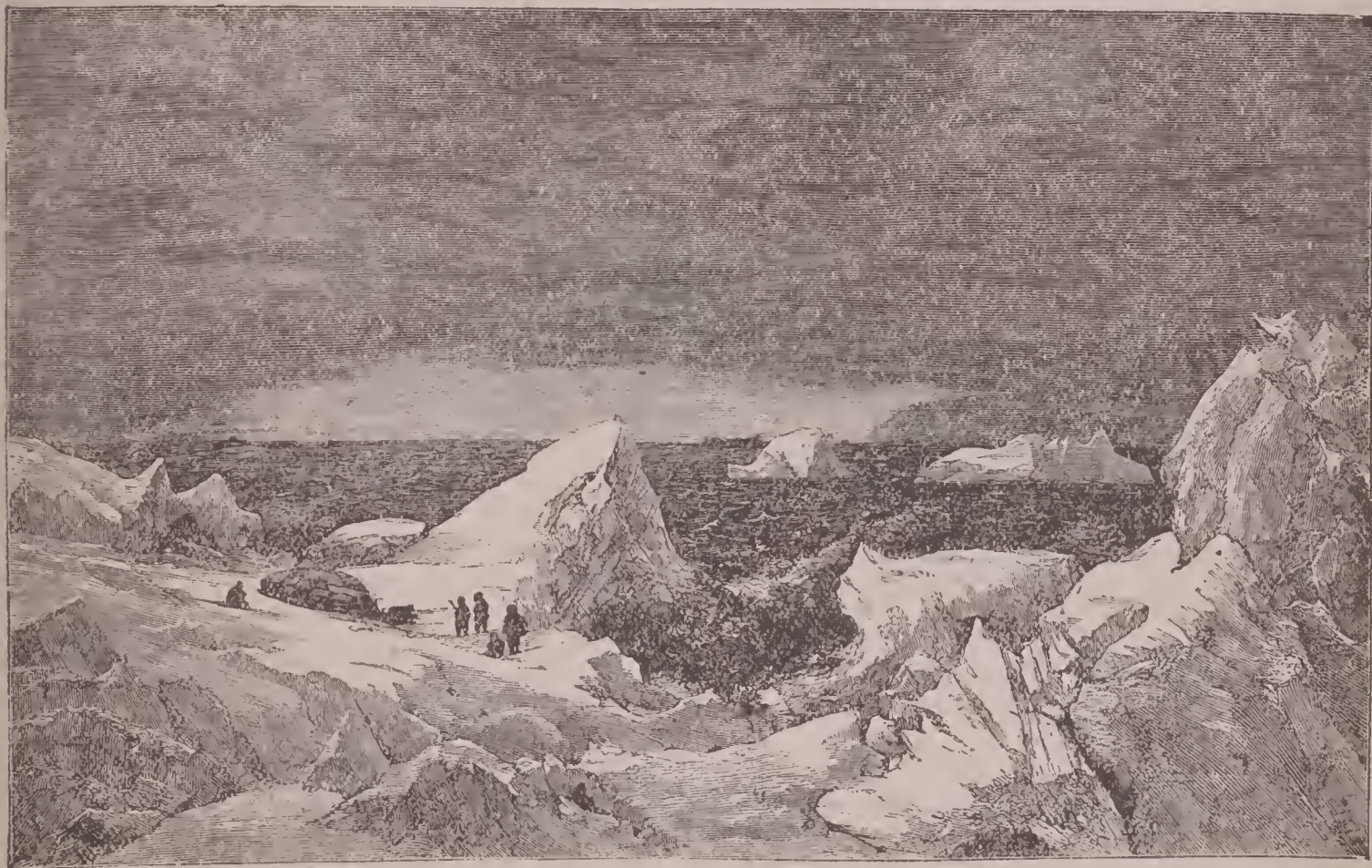
THE Dutch, as we have seen, were rivals with the English in exploring the icy seas and snow-covered lands of the Arctic, and sent out Hudson on one of his expeditions. Before this voyage of the English sailor, several attempts had been made by the merchants of Amsterdam to extend their trade in the northern seas. They were acquainted with the labors of Willoughby, and the other English adventurers, and formed a resolution to adopt some route by way of the island of Nova Zembla. Funds were raised by the liberal and wealthy burghers and corporations of Amsterdam, a ship named the *Mercure* was fitted out, and William Barentz, a native of Terschelling, near the Texel, was appointed to command her. In 1594 he sailed for the north, sighted Nova Zembla July 4th, and from that day to the 3d of August strove steadily, but fruitlessly, to force his way through the ice. No navigator had hitherto displayed such dogged perseverance, and it was only the urgent entreaties of his men that induced him to steer homeward. The reports that Barentz brought home, and the valuable astronomical observations he had made, were laid before the government of the States General, and their "High Mightinesses" resolved to take the matter in hand. They, therefore, fitted a small fleet of seven vessels, giving the command to Jacob van Heemskerke, and appointing Barentz as pilot. The expedition was, however, a failure; the ships could not penetrate the ice-pack, and Heemskerke returned home. As is often the case, governments shrink from enterprises which private individuals persevere in, and when the States-General refused to do more for

Arctic exploration than offer a reward for the discovery of the northeast passage, the merchants of Amsterdam again came to the front. They fitted out two ships, one commanded by Heemskerke, the other by Jan Cornelissoon Rijp. Barentz, although he had only the name of pilot, was the real chief of the expedition. On May 10, 1596, the ships set sail, and on June 5th saw their first masses of ice, "whereat they were much amazed, believing them at first to be white swans." June 19th, they landed on a piece of land which they thought was part of Greenland, but to which, on account of its sharp-pointed mountains, they gave the name of Spitzbergen. The ice, however, forced them back to the south, and, off Bear Island, Heemskerke's ship, with Barentz on board, was separated from its comrade and Jan Rijp. Undeterred, however, by storm or danger, they turned northward once more, and on July 17th reached the west coast of Nova Zembla, which, in memory of the English sailor, they named Willoughby Land. On the 19th, their way was again blocked by ice, compelling them to change their course. Finally, after many hardships, they found themselves by the end of August surrounded by the ice-pack. For the story of the winter, with its cold, poverty, misery and grief, we can quote from the journal of Gerrit de Veer, who was the second mate. On August 30th the masses of ice began to pile up around the ship; the snow fell thickly; the ship was lifted up by the pressure of the ice so that all about her and around her began to crack and split. "It seemed as if the ship must break into a thousand pieces, a thing most ter-



rible to see and hear, and fit to make one's hair stand on end." She soon began to crack, and the crew were set to work landing provisions, sails, gun-powder, lead, arquebusses and arms, and building a hut to shelter themselves from the snow and from the attacks of the bears. On September 11th, the whole bay was filled with blocks of ice, and Barentz resolved to build a house there which would contain them all. Fortunately, they found whole trees that drifted ashore, and these supplied them not only with timber for the house, but with firewood. It is worthy of note

On September 23d, the carpenter died, and was interred the next day on the cleft of a mountain, it being impossible to put a spade in the ground on account of the severity of the frost. The following days were devoted to the transportation of driftwood and the building of the house. To cover it in it was necessary to demolish the fore and aft cabins of the ship. The roof was put on October 2d, and a piece of frozen snow was set up like a May pole. On September 31st there was a strong wind from the north-west, and as far as the eye could reach the sea



THE OPEN SEA.

that these brave Dutchmen were the first to winter in these inhospitable regions. They had heard no accounts of what the winter would be; they could not picture the sufferings that threatened them. They bore everything with admirable patience, without a single murmur, and without any breach of discipline. The heroic example they set has been a guiding star to other explorers who have had to pass the dreary winter in the Arctic wastes, and is one that ought never to be forgotten. The narrative of De Veer tells the tale of courage, suffering and death in words so simple that all can understand, and in a style so touching that additions only spoil it.

was entirely open and without ice. "But we remained as though taken and arrested in the ice, and the ship was raised full two or three feet upon the ice, and we could imagine nothing else but that the water must be frozen quite to the bottom, although it was three fathoms and a half in depth." On October 12th they began to sleep in the house, although it was not completed. On the 21st, the greater part of the provisions, furniture, and everything which might be wanted was withdrawn from the ship, for they felt certain that the sun was about to disappear. A chimney was fixed in the centre of the room; inside a Dutch clock was hung up; bed places were formed



along the walls, and a wine cask was converted into a bath, for the surgeon had wisely prescribed to the men frequent bathing as a preservative of health. The quantity of snow which fell during this winter was really marvellous. The house disappeared entirely beneath this thick covering, which, however, sensibly raised the temperature within. Every time that they wished to go forth, the Dutchmen were obliged to hollow out a long corridor beneath the snow. Each night they first heard the bears and then the foxes, which walked upon the top of the dwelling and tried to tear off some planks from the roof that they might get into the house. So the sailors were accustomed to climb into the chimney, whence, as from a watch-tower, they could shoot the animals



POLAR FOX.

and drive them off. They had manufactured a great number of snares, into which fell numbers of blue foxes, the valuable fur of which served as a protection against cold, while their flesh enabled the sailors to economize their provisions. Always cheerful and good-tempered, they bore equally well the tiresomeness of the long polar night and the severity of the cold, which was so extreme that, during two or three days, when they had not been able to keep so large a fire as usual, on account of the smoke being driven back again by the wind, it froze so hard in the house that the walls and the floor were covered with ice to the depth of two fingers, even in the cots where these poor people were sleeping. It was necessary to thaw the sherry when it was served out, as was done every two days, at the rate of half a pint.

"On the 7th of December, the rough weather continued, with a violent storm coming from the north-

east, which produced horrible cold. We knew no means of guarding ourselves against it, and while we were consulting together what we could do for the best, one of our men, in this extreme necessity, proposed to make use of the coal which we had brought from the ship into our house, and to make a fire of it, because it burns with great heat and lasts a long time. In the evening we lighted a large fire of this coal, which threw out a great heat, but we did not provide against what might happen, for, as the heat revived us completely, we tried to retain it for a long time. To this end, we thought it well to stop up all the doors and the chimney to keep in all the delightful warmth. And thus, each went to repose in his cot, and, animated by the acquired warmth, we discoursed long together. But, in the end, we were seized with giddiness in the head; some, however, more than others. This was first perceived to be the case with one of our men who was ill and who for this reason, had less power of resistance. And we also ourselves were sensible of a great pain which attacked us, so several of the bravest came out of their cots and began by unstopping the chimney and afterwards opening the door. But the man who opened the door fainted, and fell senseless upon the snow, on perceiving which I ran to him, and found him lying on the ground in a fainting fit. I went in haste to seek for some vinegar, and with it I rubbed his face until he recovered from his swoon. Afterwards, when we were somewhat restored, the captain gave to each a little wine, in order to comfort our hearts. . . . "

"On the 11th, the weather continued fine, but so extremely cold that no one who had not felt it could imagine it; even our shoes, frozen to our feet, were as hard as horn, and inside they were covered with ice in such a manner that we could no longer use them. The garments which we wore were quite white with frost and ice."

On Christmas Day, December 25th, the weather was as rough as on the preceding days. The foxes made havoc upon the house, which one of the sailors declared to be a bad omen, and upon being asked why he said so, answered, "Because we cannot put them in a pot, or on the spit, which would have been a good omen."

If the year 1596 had closed with excessive cold, the commencement of 1597 was not more agreeable. Most violent storms of snow and hard frost prevented the Dutchmen from leaving the house. They celebrated Twelfth-night with gayety, as is related in the simple and touching narrative of Gerrit de Veer.





POLAR BEAR.



this purpose, we besought the captain to allow us a little diversion in the midst of our sufferings, and to let us use a part of the wine which was destined to be served out to us every other day. Having two pounds of flour, we made some pancakes, with oil, and each one brought a white biscuit, which we soaked in the wine and eat. And it seemed to us that we were in our own country, and among our relations and friends; and we were as much diverted as if a banquet had been given in our honor, so much did we relish our entertainment. We also made a Twelfth-night King, by means of paper, and our master gunner was king of Nova Zembla, which is a country enclosed between two seas, and of the great length of 600 miles."

After January 21st the foxes became less numerous, the bears reappeared, and daylight began to increase, which enabled the Dutchmen, who had been so long confined to the house, to go out a little. On the 24th, one of the sailors, who had been long ill, died, and was buried in the snow at some distance from the house. On the 28th, the weather being fine, the men all went out, walking about, running for exercise, and playing at bowls, to take off the stiffness of their limbs, for they were extremely weak, and nearly all suffering from scurvy. They were so much enfeebled that they were obliged to go to work several times before they could carry to their house the wood which was needful. At length, in the first days of March, after several tempests and driving snowstorms, they were able to verify the fact that there was no ice in the sea. Nevertheless, the weather was still rough, and the cold glacial. It was not feasible, as yet, to put to sea again, the rather because the ship was still embedded in the ice. On the 15th of April the sailors paid a visit to her, and found her in fairly good condition.

At the beginning of May the men became somewhat impatient, and asked Barentz if he were not soon intending to make the necessary preparations for departure. But Barentz answered that he must wait until the end of the month, and then, if it should be impossible to set the ship free, he would take measures to prepare the long-boats and the launch, and to render them fit for a sea voyage. On the 20th of the month the preparations for departure commenced—with what joy and ardor it is easy to imagine. The launch was repaired, the sails were mended, and both boats were dragged to the sea and provisions put on board. Then, seeing that the water was free and that a strong wind was blowing, Heemskerke went to see Barentz, who had been long ill,

and declared to him "that it seemed good to him to set out from thence, and in God's name to commence the voyage and abandon Nova Zembla."

"William Barentz had before this written a paper setting forth how we had started from Holiland to go towards the kingdom of China, and all that had happened, in order that if by chance some one should come after us it might be known what had befallen us. This note he enclosed in the case of a musket, which he hung up in the chimney."

On the 13th of June, 1597, the Dutchman abandoned the ship, which had not stirred from her icy prison, and, commending themselves to the protection of God, the two open boats put to sea. They reached the Orange Islands, and again descended the western coast of Nova Zembla, in the midst of ceaselessly recurring dangers.

"On the 20th of June, Nicholas Andrien became very weak, and we saw clearly that he would soon expire. The lieutenant of the governor came on board our launch and told us that Nicholas Andrien was very much indisposed, and that it was very evident that his days would soon end. Upon which William Barentz said, 'It appears to me that my life also will be very short.' We did not imagine that Barentz was so ill, for we were chatting together, and William Barentz was looking at the little chart which I had made of our voyage, and we had various discourses together. Finally he laid down the chart and said to me, 'Gerard, give me something to drink.' After he had drunk such weakness supervened that his eyes turned in his head, and he died so suddenly that we had not time to call the captain, who was in the other boat. This death of William Barentz saddened us greatly, seeing that he was our principal leader and our sole pilot, in whom we had placed our whole trust. But we could not oppose the will of God, and this thought quieted us a little." Thus died the illustrious Barentz, like his successors, Franklin and Hall, in the midst of his discoveries. In the measured and sober words of the short funeral oration of Gerrit de Veer may be perceived the affection, sympathy and confidence which this brave sailor had been able to inspire in his unfortunate companions. Barentz is one of the glories of Holland, so prolific in brave and skilful navigators. We shall mention presently what has been done to honor his memory.

Through a succession of difficulties the two open boats pursued their course, passing the so-called Isle of Crosses where they found duck eggs. In July they met some Russian vessels, who gave them some help and provisions, which saved the Dutch from dying of



hunger. When they reached Cape Kanin, on the other side of the White Sea, they heard from some fishermen that some countrymen of theirs were at Kola, just ready to put to sea. They therefore dispatched thither one of their men, accompanied by a Laplander, who returned in three days with a letter signed Jan Rijp. The poor sailors could scarcely believe their eyes when they saw the signature of the comrade from whom they had parted the year before, and were only convinced when they had compared it with others which Heemskerke had in his possession. But the good news was true news, and on September 30th Rijp arrived with a boatload of provisions, and took his old companions back to the Kola River. He was much surprised at the accounts they gave him of their long voyage of 1,200 miles, and allowed them some days of repose before starting homeward. Wholesome and abundant food refreshed them after their fatigues and cleared off the remains of scurvy. With his rescued friends, Jan Rijp left the Kola River, and on November 1st arrived at the city of Amsterdam. "We had on," says Gerrit de Veer, "the same garments which we wore in Nova Zembla, having on our heads caps of white fox-skin, and we repaired to the house of Peter Hasselear, who had been one of the guardians of the town of Amsterdam charged with presiding over the fitting out of the two ships of Jan Rijp and of our own captain. Arrived at his house, in the midst of general astonishment, because that we had been long thought dead, and this report had been spread throughout the town, the news of our arrival reached the palace of the Prince, where there were then at table the Chancellor, and the Ambassador of the high and mighty King of Denmark and Norway, of the Goths and Vandals. We were then brought before them by the 'Schout' two lords of the town, and we gave to the said lord Ambassador, and to their lordships the burgomasters, a narrative of our voyage. Afterwards each of us retired to his own house. Those who had not dwellings in the town, were lodged in an inn until such time as we had received our money, when each went his own way. These are the names of the men who returned from this voyage: Jacob Heemskerke, clerk and captain, Peter Petersen Vos, Gerrit de Veer, mate, Jan Vos, surgeon, Jacob Jansen Sterrenberg, Leonard Henry, Laurence William, Jan Hillebrants, Jacob Jansen Hoochwout, Peter Corneille, Jacob de Buisen, and Jacob Everts." Most of these names are still known in this good city of New Amsterdam.

Of all these brave sailors we have nothing further to record except that De Veer published the follow-

ing year the narrative of his voyage, and that Heemskerke after having made several cruises to India, received in 1607 the command of a fleet of twenty-six vessels, at the head of which, on the 25th of April, he had a severe battle with the Spaniards under the guns of Gibraltar, in which battle, although the Dutch were the conquerors, Heemskerke lost his life.

The spot where the unfortunate Barentz and his companions had wintered was not revisited until 1871, nearly 300 years after their time. The first to double the northern point of Nova Zembla, Barentz had remained alone in the achievement until this period. On the 7th of September, 1871, the *Norwegian*, Captain Elling Carlsen, well known by his numerous voyages in the North Sea, and the Frozen Ocean, arrived at the ice haven of Barentz, and on the 9th he discovered the house which had sheltered the Dutchmen. It was in such a wonderful state of preservation, that it seemed to have been built but a day, and everything was found in the same position as at the departure of the shipwrecked crew. Bears, foxes and other creatures inhabiting these inhospitable regions had alone visited the spot. Around the house were standing some large puncheons and there were heaps of seal, bear, and walrus bones. Inside everything was in its place. It was the faithful reproduction of the curious engraving of Gerrit de Veer. The bed-places were arranged along the partition as well as the clock, the muskets, and the halberd. Among the household utensils, the arms, and various objects brought away by Captain Carlsen, we may mention two copper cooking pans, some goblets, gun-barrels, augers and chisels, a pair of boots, nineteen cartridge-cases, of which some were still filled with powder, the clock, a flute, some locks and padlocks, twenty-six pewter candlesticks, some fragments of engravings, and three books in Dutch, one of which, the last edition of Mendoza's "History of China," shows the goal which Barentz sought in this expedition, and a "Manual of Navigation," proves the care taken by the pilot to keep himself well up in all professional matters.

Upon his return to the Port of Hammerfest, Captain Carlsen met with a Dutchman, W. Lister Kay, who purchased the Barentz relics, and forwarded them to the authorities of the Netherlands. These objects have been placed in the Naval Museum at The Hague where a house, open in front, has been constructed precisely similar to the one represented in the drawing of Gerrit de Veer, and each object or instrument brought back has been placed in the very position which it occupied in the house in Nova



Zembla. Surrounded by all the respect and affection which they merit, these precious witnesses of a maritime event so important as the first wintering in the Arctic regions, these touching reminiscences of Barentz, Heemskerke and their rough companions, constitute one of the most interesting monuments in the museum. Beside the clock is placed a copper dial, through the middle of which a meridian is drawn. This curious dial, invented by Plancius,

which served without doubt to determine the variations of the compass, is now the only example extant of a nautical instrument which has never been in very general use. For this reason it is as precious as, from another point of view, are the flute used by Barentz, and the shoes of the poor sailor who died during the winter sojourn. It is impossible to behold this curious collection without experiencing poignant emotion.

## CHAPTER IV.

### V. BEHRING AND BEHRING'S STRAIT—(1728).



A LOOK at the map of the Arctic regions shows us that the whole European and Asiatic shores of the Polar Ocean are possessed by one great power, namely, Russia; and the readers of the previous chapters will remember that it was the kindness of Russian traders and fishermen that lent aid and support to the English and Dutch explorers in the darkest hours of their distress. It is now our task to give some sketch of the labors of Russian travellers in the inhospitable north.

The geographical position of Russia compelled its northern tribes to search for an outlet for its trade through the rivers that flow into the Arctic Sea, while the frugal habits of the Russians and their experience of the rigorous climate of the north, rendered them especially fitted for explorers in the snow-covered regions of thick-ribbed ice which extend from

the North Cape to the waters that separate Asia from America. This narrow piece of water is known to us all as Behring's Strait; and we shall now proceed to give a brief account of its famous discoverer.

Vitus Behring, or Bering, as he spelled his name, was a Dane by birth, born in the year 1681, who very early in life went to sea, and made several voyages to the East Indies. In one of these voyages he made the acquaintance of a Norwegian sailor, Admiral Congo, of the Russian navy, and by his advice Behring entered the service of the Czar, becoming a sub-lieutenant in the navy in his twenty-second year. He rose steadily in his profession, and in 1720 was a captain of the second rank. In 1724 he was appointed chief of the Kamchatkan Expedition, and was charged with the task of ascertaining whether Asia and America were connected by land.

The expedition started from St. Petersburg, Feb. 5, 1725, and passed the first summer in traversing Siberia; the winter was spent in Ilenisk; and the second summer saw the exploring party working its way eastward, till it reached Okhotsk, in October. Not, however, till midsummer, 1728, did Behring arrive at the spot where his test task was to begin. This was a palisaded fort in Kamchatka, surrounded by a few huts, and occupied by a handful of Cossack. The fort was twenty miles from the sea, and surrounded by forests of larch.

Here, in 1728, he built a ship called the *Gabriel*. The timber was dragged down to the shore by dogs, the tar the explorers made themselves, while the cordage, cables and anchors had been brought nearly two thousand miles, through one of the most desolate regions of the earth. Their provisions were chiefly dried fish and fish oil. On July 9th, the *Gabriel* started



her crew consisted of forty-four men, of whom nine were soldiers. Her course was nearly all the time along the coast; and on August 11th, a month after the beginning of the voyage, she sighted St. Lawrence Island, in latitude  $64^{\circ} 20'$ , and thus was in the strait that separated the Western from the Eastern hemisphere. On August 15th, Behring determined to turn back, and on September 2d entered the Kamchatka River. Behring turned back because he felt sure that

explored higher to the north than Cape Blanco in California.

During the winter of 1728-29, which Behring spent in the Kamchatka fort, he heard from the natives that there was land away to the east, with large rivers and forests of high trees, and that midway lay an island which was visible in clear weather. He started out to find it, but again luck was against him, and storms drove him back.



SLEDGE-DRIVING.

he had sailed round the north-eastern corner of Asia, and was convinced that it was possible to sail from the Lena River to Kamchatka, and thence to Japan and the East Indies.

At the most northern spot that Behring reached, the strait is 39 miles wide, and hence, under favorable circumstances, he might have seen the American shore. Unfortunately, the weather, during the whole time, was dark and cloudy. Behring has been blamed for not cruising about to the eastward in search of land, but it must be remembered that his orders were to discover a passage from the mouth of the Lena to the Pacific, and that the American coast had not been

On his return to St. Petersburg, in 1730, he did not receive the warm welcome he hoped for, and, indeed, doubts of his statements were freely expressed. To justify his reports, he resolved to make further explorations, on a larger scale; and, accordingly, presented his plans to the Admiralty; in one of these he proposed to explore the west coast of America, and to chart the Arctic coast of Siberia, from the Obi to the Lena. In 1732, after weary years of waiting, the Russian Senate approved of his plans, and in the following year the expedition began to set out from the Capital. The whole expedition comprised 570 men, but of these only three officers and 157 men were as-



signed to the Arctic Exploration. It required great inducements to obtain officers, for, in St. Petersburg, the expedition was looked on as a mild sort of banishment, while the rank and file were threatened with all kinds of cruel punishments. We need not detail his long and tiresome march through Siberia, but in October, 1734, he was in Gakutsk, where he built two vessels the *Gakutsk*, a sloop, and a decked boat *Irkutsk*. The latter, under the command of a Swede, named Lassenius, reached the Lena delta, August 2, 1736, and near this uninhabited spot he prepared to pass the winter. He built a house from some drift-wood, but had to reduce the rations served out to his men. On November 6th the Polar night began, and shortly after the whole crew was attacked by scurvy, and so severe and deadly was the disease, that Lassenius and most of his men perished, only eight survivors being found alive by the party sent by Behring to assist them.

The unfortunate result of this expedition, while it

injured Behring in the opinion of the Russian Government, did not interrupt the series of Arctic explorations which, between the years 1734 and 1743, were pushed on in six different directions.

For a whole decade these discoverers struggled with all the obstacles which a terrible climate and the resources of a half developed country obliged them to contend with. They surmounted these obstacles. The expeditions were renewed two, three—yes, even four times. If the ves-

sels were frozen in they were hauled upon shore the next spring, repaired, and the expedition continued. And if these intrepid fellows were checked in their course by masses of impenetrable ice, they continued

their explorations on dog sledges, which here for the first time were employed in Arctic exploration. Cold, scurvy, and every degree of discomfort wrought sad havoc among them, but many survived the long polar winter in miserable wooden huts or barracks. Nowhere has Russian hardiness erected for itself a more enduring monument.

It was especially the projecting points and peninsulas in this region that caused these explorers innumerable difficulties. These points and capes had hitherto been unknown, for crude maps of this period represented the Arctic coast of Siberia as almost a straight line. It was first necessary for the navigators to send cartographers to these regions, build beacons and sea-

marks, establish magazines, collect herds of reindeer, which, partly as an itinerant food supply and partly to be used as an eventual means of conveyance, followed the vessels along the coast, while here and there, especially on the Taimyr peninsula, small fishing stations were established for supplying the vessels.

It is necessary to dwell a little longer on these expeditions. Their main object was not so much the charting of northern Siberia, as the discovery and navigation of the north-east passage. From this point of view alone they must be considered. They were an indirect continuation of the West European expeditions for the same purpose, but far more rational than these. For this reason, Behring had, on his expeditions (1725-30), first sought that thoroughfare between the two hemispheres, without which a north-east and a north-west passage could not exist. For this reason also he had, on his far-sighted plan, undertaken the navigation of the Arctic seas where this had





not already been done, and for this same reason the Admiralty sought carefully to link together their explorations to the West European termini, on the coast of Nova Zembla.

A north-east passage alone promised the empire such commercial and political advantages that the enormous expenditures and the frightful hardships which these expeditions caused Siberia might be justified.

In 1740 Behring had sailed from the harbor of Okhotsk, and in the latter part of September had entered Avocha Bay, where he built a fort which was named after his two ships, the *St. Peter* and the *St. Paul*, and is now the town of Petropaulovski. From this harbor he set out in May of the following year, he himself being in command of the *St. Peter*, and Lieutenant Chirikoff in command of the *St. Paul*. The expedition was accompanied by the famous naturalist Stetter, to whom we owe much of our knowledge of the wild animals of the region.

After a prayer service, the ships weighed anchor on the 4th of June, 1741. According to the plan adopted, a south-easterly course was taken, and in spite of some unfortunate friction, Behring gave Chirikoff the lead, so as to leave him no cause of complaint. They kept their course until the afternoon of June 12th, when they found themselves, after having sailed over six hundred miles in a south-easterly direction, in latitude  $46^{\circ} 9'$  N. and  $14^{\circ} 30'$  east of Avocha. According to their maps they should long before have come to the coasts of Gamaland, but as they only saw sea and sky, Behring gave the command to turn back. With variable and unfavorable winds, they worked their way, during the few succeeding days, in a north north-east direction up to latitude  $49^{\circ} 30'$ , where Chirikoff, on the 20th of June, in storm and fog, left Behring, and sailed east north-east in the direction of the American coast without attempting to keep with the *St. Peter*. This was the first real misfortune of the expedition. For 48 hours Behring kept close to the place of separation in hopes of again joining the *St. Paul*, and, as this proved fruitless, he convened a ship's council, at which it was decided to give up all further search for the *St. Paul*. It was also resolved, in order to remove every doubt, to sail again to the 46th degree to find Gamaland. Having arrived here, some

birds were seen, whereupon they continued their course, but without any results. During the four succeeding weeks the ship's course was between north and east, towards the western continent, but, as on their southern course they had come out upon the depths of Tuscarora, which, several thousand fathoms deep, run right up to the Aleutian reef, their sound-



A STORM IN THE ARCTIC OCEAN.

ings gave them no clew to land, although they were sailing almost parallel with this chain of islands. Behring, however, was now confined to his cabin. The troubles he had passed through, his sixty years of age, and the incipient stages of scurvy, had crushed his powers of resistance, while his officers, Waxel and Khitroff, dismissed Steller's observations with scornful



sarcasm. Not until the 12th of July did they take any precautions against running ashore. They took in some of the sails during the night and hove to. They had then been on the sea about six weeks. Their supply of water was about half gone, and, according to the ship's calculations, they had sailed  $46\frac{1}{2}^{\circ}$  from the meridian of Avocha. The ship's council therefore concluded, on the 13th of July, to sail due north, heading north north-east, and at noon on the 16th of July they finally saw land to the north. The country was elevated, the coast was jagged, covered with snow, inhospitable, and girt with islands, behind which a snow-capped mountain-peak towered so high into the clouds that it could be seen at a distance of seventy miles. "I do not remember," says Steller, "of having seen a higher mountain in all Siberia and Kamchatka." This mountain was the volcano St. Elias, which is about 18,000 feet high. Behring had thus succeeded in discovering America from the east. As they had a head wind, they moved very slowly towards the north, and not until the morning of the 20th did they cast anchor off the western coast of an island, which they called St. Elias in honor of the patron saint of the day. On the same day, Khitroff, with fifteen men, went in the ship's boat to search for a harbor and to explore the island and its nearest surroundings. Steller, who had desired to accompany him, was put ashore with the crew that brought fresh water from St. Elias, and endeavored, as well as it was possible in a few hours, to investigate the natural history of the island. Khitroff circumnavigated the island and found various traces of human habitation. Thus, on one of the adjacent islands a timbered house was found containing a fireplace, a bark basket, a wooden spade, some mussel shells and a whetstone, which apparently had been used for sharpening copper implements. In an earth hut, another detachment found some smoked fish, a broken arrow, the remains of a fire, and several other things. The coast of the mainland which was mountainous with snow-capped peaks was seen at a distance of eight miles. A good harbor was found on the north side of the large island. All the islands were covered with trees, but these were so low and slender that timber available for yards was not to be found. In his venturesome wanderings here, only now and then accompanied by a Cossack, Steller penetrated these woods, where he discovered a cellar which contained articles of food and various implements. As some of these things were sent on board, Behring, by way of indemnification, caused an iron kettle to be placed there, a pound of tobacco, a Chinese pipe, and a piece of silk cloth.

It was the night between the 5th and 6th of November that the *St. Peter* reached this coast. On the 6th the weather was calm and clear, but the crew were kept on board from weakness and work, and only Steller could go ashore with a few of the sick. They immediately betook themselves to examining the country, and walked along the coast on either side. Was this an island, or was it the mainland? Could they expect to find human assistance, and could they reach home by land? After two days of exploration, Steller succeeded in satisfying himself on these points, although it was nearly six months before he definitely ascertained that the place was an island. Unlike Kamchatka, the country was treeless, having only a few trailing willows of the thickness of a finger. The animals of the coast were entirely new and strange, even to him, and showed no fear whatever. They had no sooner left the ship than they saw sea-otters, which they first supposed to be bears or gluttons. Arctic foxes flocked about them in such numbers that they could strike down three or four score of them in a couple of hours. The most valuable furbearing animals stared at them curiously, and along the coast Steller saw with wonderment whole herds of sea-cows grazing on the luxuriant algæ of the strand. Not only had he never seen this animal before, but even his Kamchatka Cossack did not know it. From this fact Steller concluded that the island must be uninhabited. As the trend of Kamchatka was not the same as that of the islands, and as the flora was nevertheless identical, and as he moreover found a window-frame of Russian workmanship that had been washed ashore, he was convinced that the country must be a hitherto unknown island in the vicinity of Kamchatka. Behring shared this view, but the other officers still clung to their illusions, and when Waxel, on the evening of the 6th, came ashore, he even spoke of sending a message for conveyance. Steller, on the other hand, began to make preparations for the winter. In the sand-banks, near an adjacent stream, he and his companions dug a pit and made a roof of driftwood and articles of clothing. To cover up cracks and crevices on the sides, they piled up the foxes they had killed. Steller exerted himself to obtain wild fowl, seal-beef and vegetable nourishment for the sick, who were gradually taken ashore and placed under sail tents upon the beach. Their condition was terrible. Some died on deck as soon as they were removed from the close air of their berths, others in the boat, as they were being taken ashore, and still others on the coast itself. All attempts at discipline were abandoned, and those who



were well, grouped themselves into small companies, according as they liked best. The sick and dying were seen on every hand. Some complained of the cold, others of hunger and thirst, and the majority of them were so afflicted with scurvy that their gums, like a dark brown sponge, grew over and entirely covered their teeth. The dead before they could be buried were devoured by foxes, which in countless numbers flocked about, not even fearing to attack the sick.

More than a week elapsed before the last of the sick were taken ashore. On November 10th the commander was removed. He was well protected against the influence of the outer air, and was laid for the night under a tent on the strand. It snowed heavily. Steller passed the evening with him and marveled at his cheerfulness and his singular contentment. They weighed the situation, and discussed the probability of their whereabouts. Behring was no more inclined than Steller to think that they had reached Kamchatka, or that their ship could be saved. The next day he was carried on a stretcher to the sand pits and placed in one of the huts by the side of Steller's. The few men that were able to work sought to construct huts for all. Driftwood was collected, pits were dug and roofed, and provisions were brought from the ship. Steller was both cook and physician—the soul of the enterprise. On November 13th, the barrack to be used as a hospital was completed, and thither the sick were immediately removed. But still the misery kept increasing. Steller had already given up all hopes of Behring's discovery. Waxel, who had been able to keep up as long as they were at sea, now hovered between life and death. There was special anxiety on account of his low condition, as he was the only competent seaman that still had any influence, since Khitroff, by his hot and impetuous temper, had incurred the hatred of all. Moreover, those sent to reconnoitre, returned with the news that in a westerly direction they could find no connection with

Kamchatka or discover the slightest trace of human habitation. It became stormy; for several days the boat could not venture out, and the ship, their only hope, lay very much exposed near a rocky shore. The anchor was not a very good one, and



SEEKING AN OUTLET.

there was great danger that the vessel would be driven out to sea or be dashed to pieces on the rocks. The ten or twelve able-bodied men that were left, being obliged to stand in icy water half a day at a time, soon gave way under such burdens. Sickness



and want were on every hand. Despair stared them in the face, and not till November 25th, when the vessel was driven clear ashore and its keel buried deep in the sand, did their condition seem more secure. They then went quietly to work to prepare for the winter.

In December the whole crew was lodged in five underground huts (dugouts) on the bank of the stream near the place of landing. The ship's provisions were divided in such a way that every man daily received a pound of flour and some groats, until the

numbered twelve, the majority of whom died during the last days of the voyage. During the landing and immediately afterwards nine more were carried away. The next death did not occur till November 22d. It was the excellent and worthy mate, the seventy-year-old Andreas Hesselberg who had plowed the sea for fifty years, and whose advice, had it been heeded, would have saved the expedition. Then came no less than six deaths in rapid succession; and finally in December the commander and another officer died. The last death occurred January 6, 1742. In



WHALE.

supply was exhausted. But they had to depend principally upon the chase, and subsisted almost exclusively upon the above mentioned marine animals and a stranded whale. Each hut constituted a family with its own economical affairs, and daily sent out one party to hunt and another to carry wood from the strand. In this way they succeeded in struggling through the winter, which on Behring Island is more characterized by raging snowstorms than severe cold.

Meanwhile death made sad havoc among them. Before they reached Behring Island their dead

all thirty-one men out of seventy-seven died on this ill-starred expedition.

When Behring exerted his last powers to prevent the stranding of the *St. Peter*, he struggled for life. Before leaving Okhotsk he had contracted a malignant ague, which diminished his powers of resistance, and on the voyage to America scurvy was added to this. His sixty years of age, his heavy build, the trials and tribulations he had experienced, his subdued courage, and his disposition to quiet and inactivity, all tended to aggravate this disease; but he



"would nevertheless," says Steller, "without doubt have recovered if he could have gotten back to Avocha, where he could have obtained proper nourishment and enjoyed the comfort of a warm room." In a sand-pit on the coast of Behring Island, his condition was hopeless. For blubber, the only medicine at hand, he had an unconquerable loathing. Nor was the frightful sufferings he saw about him, his chagrin caused by the fate of the expedition, and his anxiety for the future of his men, at all calculated to check his disease. From hunger, cold, and grief he slowly pined away. "He was, so to speak, buried alive. The sand kept continually rolling down upon him from the sides of the pit and covered his feet. At first this was removed, but finally he asked that it might remain, as if furnished him with a little of the warmth he sorely needed. Soon half of his body was under the sand, so that after his death his comrades had to exhume him to give him a decent burial." He died on the 8th of December, 1741, two hours before daybreak, from inflammation of the bowels.

"Sad as his death was," says Steller, "that intrepidity and seriousness with which he prepared to meet death was most worthy of admiration." He thanked God for having been his guide from youth, and for

having given him success through life. He sought in every way possible to encourage his companions in misfortune to hopeful activity, and inspire them with faith in Providence and the future. Notwithstanding his conviction that they had been cast upon the shores of an unknown land, he was not disposed to discourage the others by expressing himself on this point. On the 9th of December his body was interred in the vicinity of the huts, between the graves of the second mate and the steward. At the departure from the island a plain wooden cross was placed upon the grave, which also served to show that the island belonged to the Russian crown. This cross was renewed several times, and in the sixties, so far as is known, twenty-four men erected a monument to his honor in the governor's garden, the old churchyard, in Petropaulovsk, where a monument to the unfortunate La Pérouse is also found, and where Cook's successor, Captain Clerke, found his last resting-place.

We have given at some length the story of poor Behring's voyages and death, as he was one of the early explorers who is most intimately connected with our territory of Alaska, and the sea which bears his name.

## CHAPTER V.

### ROSS—PARRY—BACK—RICHARDSON—FRANKLIN—THE SEARCH FOR FRANKLIN.

IN 1743, the British legislature stimulated the enthusiasm of the nation, and recalled the attention of British seamen to the gallant and successful labors of their ancestors in the Polar World, by the offer of a reward of £20,000 for the discovery of the North-west Passage. Several voyages were accordingly undertaken, though not with successful issues, and these were chiefly made through Behring Strait to the east, in the belief that an open sea lay between it and Hudson Bay.

Between 1769 and 1772 the intrepid Hearne made three land journeys to the American shore of the Frozen Ocean. In the last of these he discovered the Coppermine River, which he traced to its source. In 1773 Captain Phipps (afterwards Lord Mulgrave), was sent out by the Admiralty with orders to make for the North Pole, as his primary object, and to take all such magnetic and meteorological observations, and to collect all such scientific data as might possess a distinctive value, as his secondary object. Phipps took the Spitzbergen route, but penetrated no further

north than 80° 48'. Nelson served as a midshipman on board this expedition, and met with the characteristic adventure with a Polar bear which Southey has described so pleasantly.

Baffled but not discouraged, the British Parliament now offered (in 1776) in addition to its previous proposal, a sum of £20,000 for the actual discovery of the Pole, a similar sum for the discovery of any communication between the North Atlantic and North Pacific, and £5,000 to any person who should attain to within one degree of the Pole.

The last voyage undertaken by Captain Cook was in this direction. He passed through Behring Strait but got no further than 70° 45'.

In 1789, the Mackenzie River was discovered by Sir George Mackenzie. The next name on the glorious record is that of Captain (afterwards Doctor) William Scoresby, well known as a successful and adventurous whaler. In one of his voyages (in 1806) while lying-to for whales in what are called the "Greenland Seas," on the east side of Greenland, he



resolved to deviate from the beaten track and push towards the "Polar Sea," in the existence of which he strongly believed. Forcing his way through the pack-ice with almost incredible boldness and energy, he actually succeeded in clearing the formidable barrier and entering "a great openness or sea of water," reached the high latitude of  $81^{\circ} 30' N$ . In no succeeding voyage did he repeat this remarkable achievement; but he added largely to our knowledge of the eastern coast of Greenland, and accumulated much valuable and interesting information on the physical phenomena and natural history of the Arctic Regions. His various publications, moreover, contributed to keep alive the national interest in the work of maritime discovery, and led, more or less directly, to the celebrated expeditions of Parry, Ross, and Franklin.

In 1818, the British Government resolved on an energetic effort to discover the long-wished-for passage, and for this purpose the *Isabella* and the *Alexander*, two stout and well-found brigs, were placed under the orders of Captain John Ross, an officer who had already had some experience of the Northern Seas. The *Alexander* was commanded by Lieutenant Parry, a man of strong character and much scientific ardor. The two ships sailed on the 18th of April, 1818, and took the usual Baffin Bay route. In latitude  $75^{\circ} 54' N$ ., Ross fell in with an Esquimau tribe who had never before seen the white men, and addressed them with the inquiries, "Who are you? Whence come you? Is it from the sun or moon?" To these savages Ross gave the name of "Arctic Highlanders," by no means a compliment to the hardy Gaels of Caledonia. Farther north, he came upon a line of cliffs covered with red snow; a phenomenon now known to be due to the abundant presence in the snow of a minute lichen, called the *Protococcus nivalis*.

At the farthest point which he reached, Ross was too far south to discern more than the outline of the land near Smith Sound; but he named the bold headlands which guard the entrance to this channel after his ships, Cape Isabella and Cape Alexander.

Descending the west side of the bay, he found the waters clear of ice and extremely deep. The land was high, and the range of mountains, in general, free from snow. A noble inlet, nearly fifty miles wide, with cliffs on both sides, now offered itself to view,



IN THE GREENLAND SEAS.

and the ships entered it on the 29th of August. But they had scarcely accomplished thirty miles when Ross, to the surprise and vexation of his officers, declared that he saw land stretching across the inlet at



a distance of eight leagues, and ordered the ships to tack about and return. To this imaginary land he gave the name of Croker Mountains. Parry, on the other hand, was of opinion that this great inlet, now recognized as the Sir James Lancaster Sound of Baffin, was no land-locked bay, but a strait opening out to the westward; and on the return of the two ships to England he openly declared his opinion. The English public supported the energetic Parry; and after a vigorous wordy warfare, the Government resolved to place him in charge of the *Hecla* bomb-ship, and the *Griper* gunboat brig, with which he sailed for the North on the 5th of May, 1819.

On the 15th of June he came in sight of Cape Farewell, and then steered northward, up Davis Strait and Baffin Bay, as far as latitude  $73^{\circ}$ , where he found himself hemmed in by masses of ice. On the 25th, however, a way opened up, and Parry pushed forward, boldly and energetically, until he reached Lancaster Sound. Here he was on the ground made familiar by the expedition of the preceding year, and was soon to determine whether Ross's supposed mountains had any real existence. "It is more easy to imagine than describe," says Parry, "the almost breathless anxiety which was now visible on every countenance, while, as the breeze increased to a fresh gale, we ran quickly up the sound."

As they advanced the "Croker Mountains" disappeared into "thin air," and Parry proceeded as far as the mouth of a great inlet, which he named Barrow Strait. Entering this, he sailed onward to Prince Regent Inlet, which, with various capes, bays and islands, he named and surveyed. On approaching the magnetic (not the actual) North Pole, he found his compasses rendered almost useless by the "dip" or "variation" of the needle. Great was then the excitement on board the two ships; and the excitement increased to enthusiasm when, on September 4th, after crossing the meridian of  $113^{\circ}$  W. longitude, Parry announced to his men that they had earned the Government grant of £5,000.

Two weeks later, they were beset by the ice, and in the *Hecla* and *Griper* Bay, on Melville Island, Parry resolved to pass the winter. In the following year,

the thaw did not set in until July, and it was August before Parry released his ships. Then he started for home, and, on arriving in England, about the middle of November, 1820, was received with a hearty welcome.

His success led to his appointment to the command of another expedition in 1821. His ships, the *Hecla* and *Fury*, were equipped with every appliance



PARRY.

that scientific ingenuity could suggest or unlimited resources provide. They sailed from the Nore on the 8th of May; they returned to the Shetland Isles on the 10th of October, 1823. In the interval—seven and twenty months—Parry and Lyon (his lieutenant) discovered the Duke of York Bay, numerous islets on the north-east coast of the American mainland, Winter Island, the islands of Annatook and Ooght, *Hecla* and *Fury* Strait, Melville Peninsula and Cockburn



Island. A glance at the map will show the reader how far to the westward these discoveries carried the boundary of the known region. While encamped on Winter Island, the English were visited by a party of Esquimaux, whose settlement they visited in turn. There they found a group of five snow huts with canoes, sledges, dogs, and above sixty men, women and children, as regularly and to all appearance as permanently fixed as if they had occupied the same spot the whole winter. The astonishment with which the English surveyed the exterior aspects of this little village was not diminished by their admission into the interior of the huts composing it. Each was con-



CAPE ALEXANDER.

structed entirely of snow and ice. After creeping through two low passages, having each its arched doorway, the strangers found themselves in a small circular apartment, of which the roof formed a perfect arched dome. From this central apartment three doorways, also arched, and of larger dimensions than the outward ones, opened into as many inhabited apartments, one on each side, and the third opposite the entrance. Here the women were seated on their beds, against the wall, each having her little fire-place or lamp, with all her domestic utensils about her. The children quickly crept behind their mothers; the dogs slunk into the corners in dismay.

The construction of the inhabited part of the hut

was similar to that of the outer apartment, being a dome, formed by separate blocks of snow laid with great regularity and no small ingenuity, each being cut into the shape requisite to build up a substantial arch, from seven to eight feet high in the centre, and with no other support than this principle of building supplies. Sufficient light was admitted by a circular window of ice, neatly fitted into the roof of each apartment.

We must now return to the year 1819, when the British Government, in its desire to complete the conquest of the North Pole, resolved on an overland exploration as supplemental to its efforts by sea. It was resolved to survey the coast eastward from the Coppermine River to Behring Strait, and for this purpose an expedition was equipped, consisting of Lieutenant Franklin as leader, Dr. Richardson as naturalist, two midshipmen of high character—Messrs. Hood and Back, and two picked English seamen.

They arrived at York Factory, Hudson Bay, on the 30th of August; left it on the 9th of September; and reached Cumberland House, another of the Hudson Bay Company's settlements, on the 22d of October—having accomplished a journey of 690 miles in forty-two days. After resting for a while, Franklin and Back went forward by themselves to Chipewyan, near the west point of Athabasca Lake in order to superintend the preparations being made for their intended adventure. It was a terrible journey. The cold was frightful, and beyond measurement, because the thermometer was frozen. Provisions were scarce, and every movement caused intense physical pain. But moral courage carried them over every

difficulty, and Chipewyan was reached at last.

Here they waited until the rest of the party came up; and then, attended by a train of Canadian boatmen and Indians, they moved onward some 500 miles to Fort Enterprise, where a small hut was built of pine-wood to shelter them during the winter. It stood on a gentle ascent, at the base of which slept the frozen current of Waiter River. Here the explorers employed themselves in killing reindeer and in preparing with their fat and flesh that dried, salted and pounded comestible called pemmican. About one hundred and eighty animals were killed. But even this number did not furnish an adequate supply for Franklin's party; and as the expected stores of



tobacco, ammunition and blankets did not arrive, Mr. Back, with some Indian and Canadian attendants, returned to Chipewyan for them. Having obtained them, he once more rejoined the party at Fort Enterprise—after an absence of five months and a journey of 1,104 miles, in “snow-shoes and with no other covering at night in the woods than a blanket and deer-skin.”

It was the middle of June, 1821, before the ice broke up in the Coppermine River. Then Franklin began his journey, passing down the stream in light

excellent harbors, all of them supplied with small rivers of fresh water abounding with salmon, trout and other fish. The survey of George the Fourth's Coronation Gulf—to adopt Franklin's barbarous nomenclature—being completed, the explorers prepared to return to Fort Enterprise. The overland part of the journey was attended with the most terrible hardships. They suffered from the combined afflictions of cold, hunger and fatigue. They were so reduced in bodily strength that it was with difficulty they could drag along their languid limbs; and when



SNOW HUTS.

birch canoes, and occasionally pausing to hunt the reindeer, musk-oxen and wolves which frequented its banks. Having reached the mouth of the river, the twenty adventurers launched their barks into the Polar Sea, which they found almost tideless and comparatively free from ice.

The extreme westward point at which, after many experiences, Franklin arrived, was situated in lat.  $68^{\circ} 30'$ , and he appropriately named it Point Turnagain. Between this headland on the east and Cape Barrow on the west, a deep gulf opens inland as far south as the Arctic circle. It was found to be studded with numerous islands, and indented with sounds affording

at last within forty miles of their winter asylum, they found themselves at their last ration. No food, no shelter, and the severity of an Arctic winter pressing upon them! Mr. Back, with three of the stoutest Canadians, gallantly started forward to seek assistance, and were followed in a few days by Franklin and seven of the party—leaving the weakest, under the care of Dr. Richardson and Mr. Hood, to proceed at leisure. Four of Franklin's companions, however, soon gave up the attempt from absolute physical incapacity. One of them—Michel, an Iroquois—returned to Dr. Richardson, the others were never again heard of. Franklin pushed forward, living on berries



and a lichen called *tripe-de-roche*, and reached the hut; but it was without an inhabitant, without stores and blocked up by snow. Here he and his three companions lingered for seventeen days, with no other food than the bones and skin of the deer which had been killed the preceding winter, boiled down into a kind of soup. On October 29th Dr. Richardson and John Hepburn, one of the seamen, made their appearance. But where were the rest of the party?

Dr. Richardson had a tragic tale to unfold. He

own use. On the 20th, while Hepburn was felling wood, he heard the report of a gun, and turning quickly round, saw Michel dart into the tent. Mr. Hood was found dead; a ball had penetrated the back of his skull; there could not be the shadow of a doubt that Michel had fired it. He now grew more suspicious and impatient of control than ever; and as he was stronger than any other of the party, and well armed, they arrived at the conviction that their safety depended upon his death. "I determined," said

Dr. Richardson, "as I was thoroughly convinced of the necessity of such a dreadful act, to take the whole responsibility upon myself; and immediately upon Michel's coming up I put an end to his life by shooting him through the head."

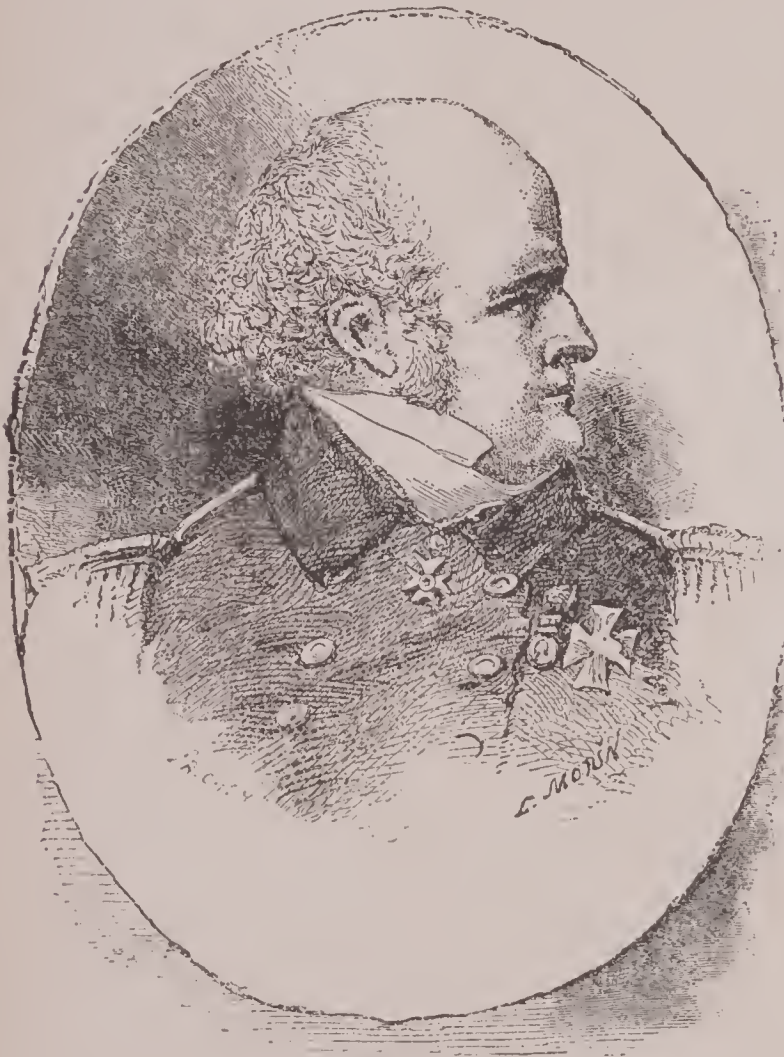
They occupied six days in travelling twenty-four miles, existing on lichens and pieces of Mr. Hood's skin cloak.

On the evening of the 29th they came in sight of the fort, and at first felt inexpressible pleasure on seeing the smoke issue from the chimney. But the absence of any footprints in the snow filled their hearts with sad forebodings, which were fully realized when they entered the hut and saw the wretchedness that reigned there.

The exploring party was now reduced to four—Franklin, Richardson, Hepburn and an Indian; and that these could long survive seemed impossible, from their absolute weakness and lack of food. Happily, on the 7th of November three Indians arrived, whom Mr. Back had dispatched from Chipewyan with supplies; and they tended the sufferers carefully until all were strong enough to return to the English settlement. And in this way was accomplished a journey of 5,500 miles; mostly over a bleak and barren country and under an inclement sky, with terrible cost of physical and mental suffering, and with much loss of

life, but with results which greatly enlarged the boundaries of geographical knowledge.

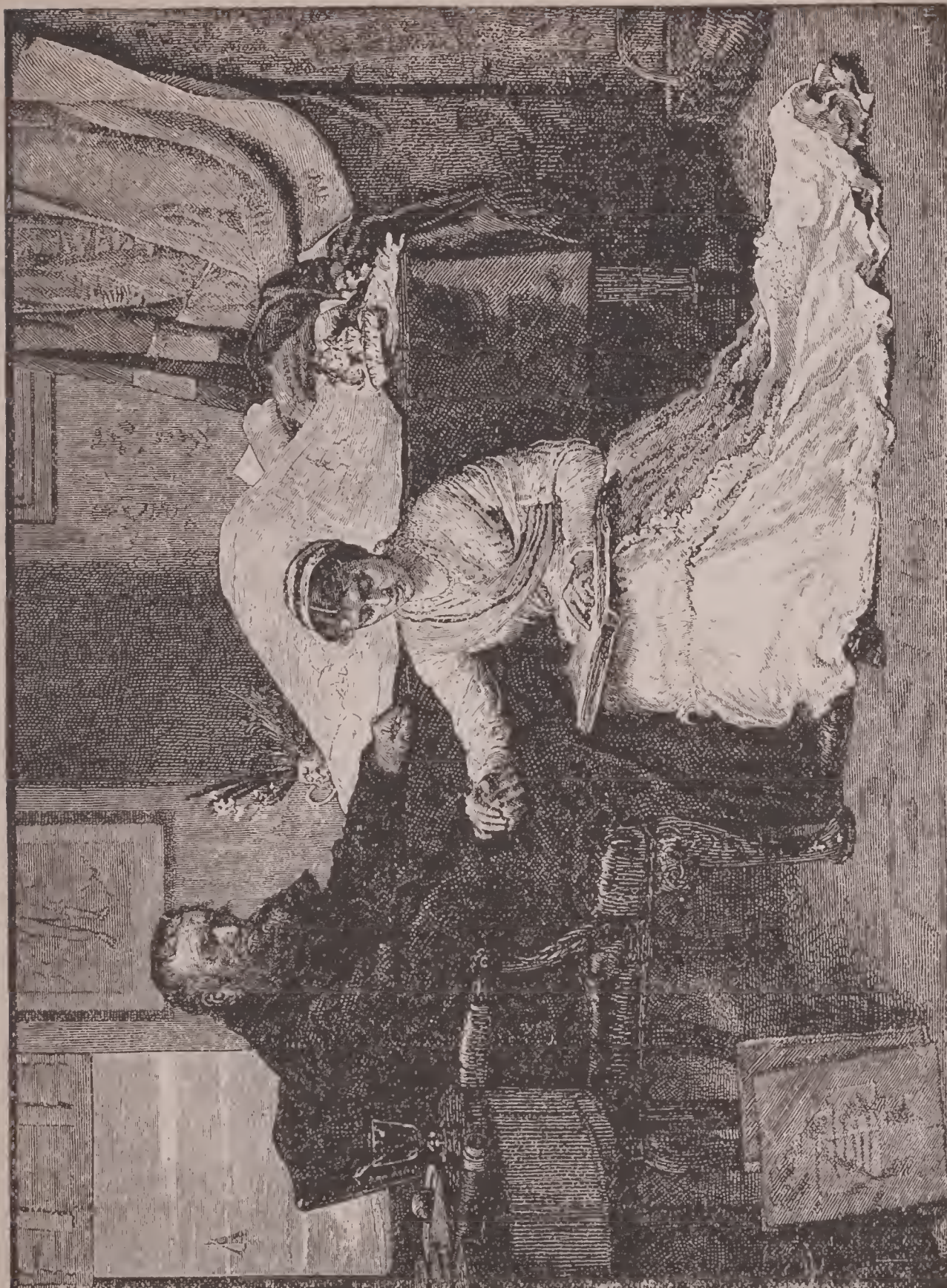
Four expeditions—or, more correctly speaking, one expedition in four divisions—set out from England in 1824. Parry was sent to explore Prince Regent Inlet; Franklin was ordered to descend the Mackenzie River to the sea, and then, dividing his party, to dispatch one half to the eastward, while he led the other half westward to Behring Strait; Captain Beechy was commissioned to sail to Behring Strait via Cape Horn, and thence to Kotzebue Sound, where



SIR JOHN FRANKLIN.

stated that for the first two days after Franklin's departure his party had nothing to eat. On the third day Michel arrived with a hare and a partridge, which afforded each a small morsel. The fourth day they fasted. On the 11th Michel offered them some flesh, which he declared to be part of a wolf; but they afterwards had good reason to suspect it was the flesh of one of the unfortunate men who had left Franklin to return to Richardson. They noticed that Michel daily grew more furtive and insolent, and were convinced that he had a supply of meat for his





"IT CAN BE DONE, AND ENGLAND OUGHT TO DO IT"—SIR JOHN FRANKLIN.



he was to wait for Franklin; and Captain Lyon was directed to keep southward of Southampton Island, up Rowe's Welcome to Repulse Bay, and across Melville Isthmus to Point Turnagain. The object in view, as the reader will surmise, was to ascertain the exact configuration of the northern shore of the American continent.

Captain Lyon met with many disasters, and, when within eight miles of Repulse Bay, was compelled by the ice-drifts and the adverse winds to abandon the enterprise.

Parry, with the *Hecla* and *Fury*, reached Lancaster Sound, but, being caught in the ice, was forced to winter at Port Bowen. In the following season the *Fury* was driven ashore by the pressure of accumulated masses of ice, and so damaged that Parry was obliged to remove her crew and stores to the *Hecla*, after which he returned to England.

Franklin was not much more successful. Accompanied by Dr. Richardson, Back, and Messrs. Kendall and Drummond, he arrived at Fort Chipewyan in July, 1825, and thence proceeded to Great Bear Lake, where he wintered. When the spring returned he began the descent of Mackenzie River, and, after

146 miles distant from him. Franklin, after surveying the coast for 374 miles, and accomplishing a voyage of upwards of 2,000 miles, returned to Great Bear Lake, where he was joined by Dr. Richardson. In the following year Beechy once more sailed for the appointed rendezvous; but Franklin, meanwhile, was on his way back to England.

In 1827 the indefatigable Parry started with an expedition for the north shore of Spitzbergen. It was characterized by his daring attempt to cross the pack-ice in light boats and sledges; the former being used in the water-ways and pools, the latter in travelling over the frozen plains. Nothing but the strongest enthusiasm could have rendered this enterprise possible. When the explorers arrived at a gap in the ice, they launched their boats and embarked. On reaching the opposite side they landed, and by sheer force hauled up the boats; a laborious process, occupying so much time and making such demands on the men's strength that only eight miles were accomplished in five days. They could not travel except by night on account of the glare of the snow, which threatened them with blindness. Breakfasting soon after sunset, they labored for some hours; then made their chief meal, and towards sunrise halted, lighted their pipes, wrapped themselves up in their furs and laid down to rest.

The reader must not suppose that the ice-fields of the Polar regions are as smooth and level as the frozen surface of an English river. They are intersected by "lanes" of water and broken up by rugged hummocks of ice which can be crossed only with extreme difficulty. In spite of every obstacle, Parry pressed on, ambitious to reach the 83d parallel of latitude. But at last he became aware of the startling circumstance that, faster than he moved forward, the ice was carrying him backward; in other words, it was slowly drifting southward beneath his feet, and bearing him and his party along with it. To struggle against an adverse Nature was hopeless. In lat. 82° 45' he gave it

up; for though they had travelled nearly 300 miles over the rugged ice, and through half frozen water, they had advanced no more than 172 miles from the *Hecla*.

Steam was first used as an agent of Arctic exploration in 1829, when Sir Felix Booth placed a steamship, the *Victory*, under the command of Sir John Ross and his nephew, Sir James. The *Victory* made



INTERIOR OF A TENT.

a voyage of 1,045 miles, reached the sea in lat. 69° 14' N. and long. 135° 59' W. He then undertook the westward route, while Richardson travelled eastward. In long. 149° 39' W., Franklin was arrested by a barrier of rock and ice, which he named Repulse Reef, and, being short of provisions turned back, ignorant of the fact that Captain Beechy had brought his ship, the *Blossom*, up to Point Barrow, or only



her way into Prince Regent Inlet; found the wreck of the *Fury* on the 12th of August, and on the 15th reached Parry's furthest point. Thence she accomplished 300 miles along a previously unexplored coast, and on the 7th of October went into winter quarters in what is now called Felix Harbor. There Ross was held fast in the ice for eleven months. In September, 1830, he once more got underway, but after sailing for about three miles, was again caught in the pack-ice and shut up until August, 1831. On this occasion the *Victory* accomplished *four* miles, and on the 27th of September was imprisoned for

down that further progress was impossible. Here he wintered, the whole party undergoing the most fearful sufferings and several dying. With the first warm days of the summer of 1833 their hopes revived. They resumed their perilous adventure, and on the 15th of August gained the open sea and took to their boats. At midnight they passed Edwin Bay and next morning reached the farthest point to which they had advanced in the preceding year. Finding an open "water lane" they kept to the northward, and in the evening were tossing off the north-eastern point of the American continent. On the 17th great was their



WINTER QUARTERS—THE COMMON AURORA-ARC.

another winter, having thus achieved exactly *seven* miles in two years.

In April, 1832, James Ross made a sledge excursion to the westward and crowned himself with glory by reaching and fixing the magnetic North Pole in lat.  $70^{\circ} 5' 17''$  N. and lat.  $96^{\circ} 46' 45''$  W.

The long imprisonment in the ice had by this time affected the health of the crew; and as there was no chance of releasing the ship, Ross determined to abandon her, and effect his escape from the Polar solitudes in boats and sledges.

He made first for the wreck of the *Fury* in order to avail himself of her stores and materials; and after a terrible journey reached it, but so spent and broken

joy to see before them the ample expanse of Barrow Strait; and with a favorable wind they now steered to the south, passing Cape York and Admiralty Inlet, and on the 25th reaching the eastern shore of Navy Board Inlet.

At four o'clock on the following morning the lookout man announced that a ship was in sight; but as the breeze was blowing freshly, she bore away under all sail, leaving them behind. Fortunately a dead calm succeeded, and by dint of hard rowing our explorers approached so near that their signals were descried, when the ship heaved to and lowered a boat, which made directly towards them. The mate in command asked them if they were in distress and



offered assistance, adding that he belonged to the *Isabella* of Hull, once commanded by Captain Ross but then by Captain Humphreys. He was with difficulty convinced that his former commander stood before him—declaring that it was all a mistake, for he had certainly been dead for two years. When finally satisfied, he hastened back to his ship with the glad tidings, and immediately her yards were manned, and three ringing cheers greeted the captain and his party.

As soon as possible Captain Humphreys steered for England, and on the 12th of October reached Stromness in Orkney. The intelligence of the rescue so happily accomplished quickly spread thence throughout the kingdom, and Captain Ross and his companions were received as men who had risen from the grave. On his landing at Hull he was welcomed by enthusiastic crowds, like a general fresh from the field of victory. He fully deserved the reception thus accorded him.

In the fewest possible words, we must record the discovery of Great Fish River in 1833 by Lieutenant Back, and Dease and Simpson's exploration of Victoria Land and Boothia in 1838.

With somewhat more detail we must refer to Captain Back's exploration of the coast of Boothia Felix. He left England in the *Terror* on June 14th, 1836, and on the 1st of August was struggling with the ice-floes off Resolution Island. On the 23rd he sighted Baffin's Island, and began to work his way through a sea of ice to Southampton Island. Thence he proceeded towards Repulse Bay, where he intended to winter; but late in the month of September a violent storm drove him back past Cape Comfort, where the *Terror* was fairly ice-bound, resting on the solid ice as on a cradle, and driven to and fro as the great frozen plain moved with the heaving currents and rushing winds. In this position Captain Back and his followers passed the winter, enduring severe hardships and constantly disquieted by violent gales.

Towards the close of February the floe rent asunder, with a commotion which threatened to crush the ship into dust. Hither and thither drove the broken masses, hurtling against one another, grinding and crashing together with the most appalling sounds—now lifting the ship clean out of the water, now dashing against her sides with a force which made her reel from stem to stern. This series of disturbances extended into March. On the 16th they reached a crisis. A mad onset of floating ice raised the quivering vessel hard upon the floe. "Scarcely ten minutes," says Back, "were left us for the expres-

sion of our astonishment that anything of human build could outlive such assaults, when another equally violent rush succeeded, and in its way toward the starboard quarter threw up a rolling wave thirty feet high, crowned by a blue square mass of many tons, resembling the entire side of a house, which, after hanging for some time in doubtful poise on the ridge, at length fell with a crash into the hollow, in which, as in a cavern, the after part of the ship seemed imbedded. It was indeed an awful crisis, rendered more frightful from the mistiness of the night and dimness of the moon."

During this long and gloomy period of disaster, the unfortunate *Terror* was driven to and fro over a range of twenty-six to forty-eight miles north-west of Seahorse Point; but after the 16th she kept away from shore, and set towards the southeast. Another month passed by and still the ice held her in its grip. Then it parted for awhile, and Back seized the opportunity to refit his shattered vessel. Once more it closed in, and so continued from the 7th of May until the 2d of June, when it finally broke up, but without any violent commotion. Then the ship's hull was calked and coated with tar; and a channel having been cut through the open floe into the open sea, the *Terror* finally regained her liberty on the 13th of July, after four months detention.

She was now near Charles Island; that is, about midway between Cape Comfort and the mouth of Hudson Strait. What was to be done. A careful inspection of the ice-battered vessel soon answered this question. There was nothing for it but to turn her prow homeward; and, indeed, no little doubt was felt whether she would ever gain in safety a British port. She was completely crazy, broken, leaky, riddled; and not even her tossing to and fro and prolonged battle with the grinding ice-masses had been a more perilous experience than her voyage across the Northern Atlantic proved. How she rolled with every sea! How she bent before every gust of wind! When she reached the northwest coast of Ireland she was actually sinking by the head, so that it was found necessary to run her ashore in Lough Swilly on the 3d of September. Had she been three hours longer at sea, she would assuredly have foundered.

Captain Back's voyage added nothing to our knowledge of the geography of the Polar World; but it furnishes a brilliant illustration of the resolution, courage and endurance of British seamen. It occupies a page in Arctic history which is comparatively little known; yet it is a page of the highest interest.

In the spring of 1845 the *Erebus*, under Sir John



Franklin, accompanied by the *Terror*, under Captain Crozier—both ships being carefully fitted out and provisioned for three years—sailed from the Thames. The crews numbered 137 picked men.

On the 8th of June they left the Orkneys, steering for the extreme point of Greenland, known as Cape Farewell; where, indeed, the adventurer does, as it were, bid farewell to the security and liberty of the civilized world. A month later they lay at anchor in the middle of a group of rocky inlets on the east side

up, the westward route lies open, and the Arctic expedition ploughs the waves for Lancaster Sound. Thereafter a cloud descends upon it; it passes into the heart of the grim solitudes of the Polar World, and men hear of it no more. Whether it bent its course, and how it reached Cape Riley and Beechy Islands, or what mishaps befell the two stout ships composing it, are problems the solution of which even now is far from complete.

When two years had elapsed without any tidings



THE "TERROR," WITHOUT SHELTER FROM THE NORTH, BLOCKED UP WITH CLOSE-PACKED ICE.

of Baffin's Bay. Yet another fortnight and we see them with the "mind's eye," as some of the whalers saw them, gallantly struggling with the ice which impeded their progress across the Bay of Baffin to Lancaster Sound. Seven officers man a boat and drag her across the ice to visit the whalers. They go on board the *Prince of Wales*, of Hull. "All well," they report; and express the blithest, cheeriest confidence in the success of their enterprise. After a hearty handgrasp they say good-bye and return to their ships. On the same evening (July 26th) the ice breaks

of the expedition reaching England, the public mind grew seriously alarmed. Expectation deepened into anxiety; anxiety darkened into fear. When the winter of 1848 passed away, and still no tidings came, it was felt that further inaction would become intolerable. Hitherto the great object had been the discovery of the northwest passage; now the thoughts of men were all directed to a search after Franklin and his companions. Strangely enough, Providence had so ordered it that in the search after these "martyrs of science" the former object was attained.



An expedition in search of the missing heroes was despatched under Sir James Ross, and another under Sir John Richardson; both added to the stores of geographical knowledge, but nothing more. These had worked from the eastward. Captains Moore and Kellet worked from the westward, entering Behring Strait and actually reaching, by their boats, the north of MacKenzie River. In the spring of 1849, the British Government offered a reward of £20,000 to any private explorers, of any nation, who should discover and succor the wanderers; and Lady Franklin, out of her own resources, organized several relieving parties. So it happened that, in 1850, no fewer than twelve vessels, led by Ross, Rae, McClure, Osborne, Collinson, Penny, Austin, Ommaney, Forsyth and De Haven, beside boat and sledge companies, plunged deep into the far northern wildernesses to trace the footprints of the lost. The Admiralty orders to Franklin had been to pass through Lancaster Sound into Barrow Strait; thence to Cape Walker, and from Cape Walker, by such course as he might find convenient, to Behring Strait. The general opinion was, that he had got to the west of Melville Island and then been caught by the ice among the numerous islands lying in that part of the Arctic Sea. And it was supposed he would be engaged in an effort to cross the ice and reach either one of the Hudson Bay settlements, or some whaling station.

Dr. Rae therefore started for Banks Island, with the intention of pushing on to Cape Walker. Captains Collinson and McClure sailed for Behring Strait, in order to take up the eastward route. Captain Austin in the *Resolute*, Captain Ommaney in the *Assistance*, and Lieutenants Cater and Osborne in the *Pioneer* and *Intrepid*, proceeded to Baffin's Bay, in order to follow up Franklin's track; while other westward bound expeditions, such as the *Felix* under Captain Sir John Ross, Baptain Forsyth in the *Prince Albert*, Captain Penny in the *Lady Franklin*, started for various points of Banks Land and Boothia. An American expedition, fitted out by Mr. Henry Grinnell, a New York merchant, and consisting of the *Advance* and *Rescue*, under Lieutenant De Haven, sailed also for Banks Land and Melville Island in May, 1850.

It was in this year that the first traces of the missing voyagers were discovered, through the accidental detention at Beechy Island of two of the searching expeditions—namely, those of Austin and Penny.

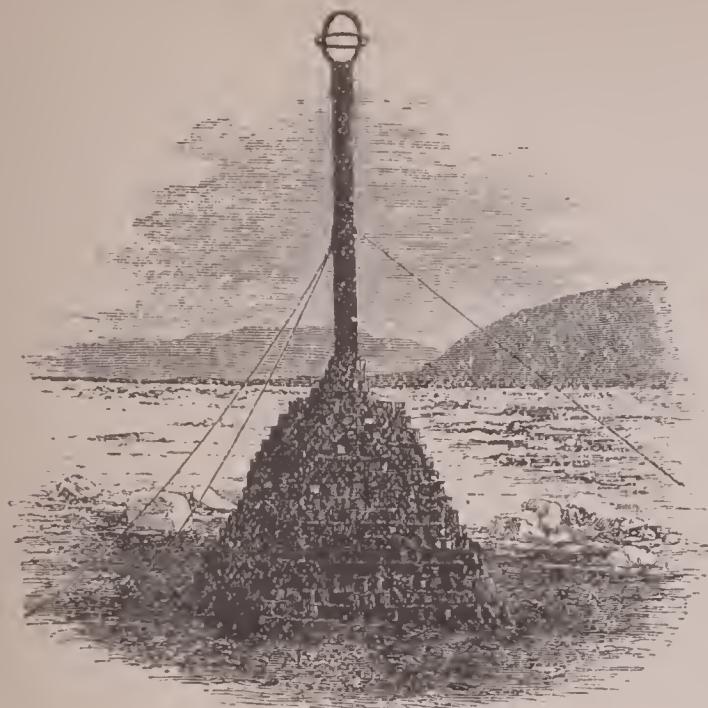
When these, in August, 1850, had reached the mouth of Wellington Channel, they were driven by the large ice-fields sweeping out of it and out of Barrow Strait, to seek shelter in a great bay formed at

the eastern entrance of the channel, and almost bisected by Beechy Island. On the 23d, a boat's crew from Captain Ommaney's ship, the *Assistance*, landed on one of the headlands of this bay, and, to their absolute surprise, discovered signs of a former visit from Europeans. Under the bold, dark cliffs of Cape Riley, might be seen the ground plan of a tent, scraps of rope and canvas, quantity of birds' bones and feathers, besides a long-handled rake that had been used apparently in collecting the beautiful weeds of the ocean-bed. Nothing was found, however, to identify these relics with Franklin's expedition. When Captain Penny heard of the "find" he determined, in conjunction with Lieutenant De Haven (of the Grinnell Expedition), to prosecute a careful search in the vicinity of Wellington Channel. While the exploring ships were lying under the west point of Beechy Island some of the men obtained permission to go ashore. On landing, they sauntered towards a low projecting spur, which stretches to the north, choosing a convenient spot to cross the huge ridges of ice lying piled up along the beach. They were seen to mount the ridge or backbone of the point; in a minute afterwards they were observed from the ships to rush towards a dark object, and gather round it with every sign of excitement. It was immediately *felt* that fresh traces had been discovered, and a rush of all hands took place to Beechy Island. There, on the point, stood a carefully constructed cairn of a pyramidal form. The base consisted of a series of preserved meat-tins filled with gravel and sand, and more meat tins were so arranged as to taper upwards to the summit, where was fixed the remnant of a broken boarding-pike. But no record could be found; nothing to connect it with Sir John Franklin. Presently, as they looked along the northern slope of the island, other strange objects caught their eye. Another rush of eager, breathless beings, and all stand in silence before three graves. Some of them are unable to refrain from tears as they mutter the words inscribed upon the rude tablets, "*Erebus*," and "*Terror*."

On the 27th of August, as if drawn by some magnetic attraction, no fewer than ten searching-vessels met at Beechy Island, and several lay there during the winter with the view of resuming their work in the spring of 1851, but no additional discoveries were made. Sledging parties were sent out in all directions, and along the shores of Wellington Channel, the coasts of Banks Land, and the waters from Barrow Strait to Melville Island, 675 miles of new coastline were surveyed. The outcome of all this labor



and adventure was represented by the generally accepted conclusion that Franklin, after leaving Wel-



A POST-OFFICE CAIRN.

lington Channel, had moved in a southwest direction.

Special reference should be made, however, to the skillfully organized sledge expeditions of Captain Austin. These were designed to explore the coasts and islands along Parry Strait, the sea belt westward from Barrow Strait to Melville Island, and the north end of Banks Land; Wellington channel being reserved for Captain Penny. The westward party numbering fourteen sledges and 104 men, started under Captain Ommaney on the 14th April, 1857, to an encampment on Griffin Island, where they were carefully inspected by Captain Austin. On the evening of the 15th they set out, with kites and sails attached to the the boats, and their men singing lustily while hauling at the drag ropes.

Three of the parties proceeded along the southern, and three along the northern shore. The record of their achievements runs as follows: No. 1, under Captain Ommaney, travelled 480 miles, of which 205 were previously unknown, and was absent 60 days.

No. 2, under Lieutenant (afterwards Admiral) Sherard Osborne, discovered 50 miles, travelled 506 miles, was absent 58 days. No. 3, under Lieutenant Browne, travelled 375 miles, discovered 150 miles of coast, and was absent 44 days. Three went to the southward. Of those which took a northerly course, No. 1 travelled 550 miles, discovering 70 miles of coast, and was absent 62 days. No. 2, commanded by Lieutenant M'Clintock, travelled 760 miles, discovered 40 miles of coast, and was absent for 80 days. Lieutenant M'Clintock pushed as far westward as a point in lat.  $74^{\circ} 38'$  N. and longitude  $114^{\circ} 20'$  W. No. 3, under Surgeon Bradford, travelled 669 miles, discovering 135 miles of coast, and being absent 80 days. The achievements of these parties show what may be expected from the sledge journeys to be undertaken in connection with the present Arctic expedition (1876).

The other sledges were absent only for periods varying from twelve to thirty-four days, their business being to form depôts of provisions, ascertain positions, and take observations. But, though their work seems easier than that of the farther-reaching parties, they suffered much more severely, for no fewer than twenty-eight of their men were frost-bitten, and one of the leaders died from cold and fatigue.

After receiving and considering the reports sent in by his officers, Captain Austin came to the conclusion



THE THREE TOMBS. (*Franklin Expedition.*)

that the expedition under Franklin had not proceeded either to the southward or westward of Wellington Strait.



The sledge parties appointed to explore Wellington Channel were six in number and consisted of forty-one men, led by Captain Stewart, Messrs. Marshall, Reid, and J. Stewart, and Surgeons Sutherland and Goodsir, under the general superintendence of Captain Penny. They started on the 27th of April, but soon met with stormy weather, and, after having been sore buffeted for several days, were forced to return. They rested a while and then, on the 6th of May, set forth again. Some made so bold a circuit as almost to touch the most northerly of Captain Austin's parties; but their principal feat was the discovery of a wide westward channel of open water extending along the further side of the lands which bound Barrow and Parry Straits.

In this discovery Captain Penny was personally concerned, and he made vigorous efforts to follow it up. Following the coast line of Wellington Channel, he reached lat.  $75^{\circ} 22'$  N. at Cape Duhorn, from which he struck ten miles northwestward to Point Decision. Thence, on the 15th of May, he crossed the ice, still in a northwesterly direction, to an island which he named Baillie Hamilton. On the 17th, after completing the circuit of this island, he reached the open strait, saw in it twenty-five miles of clear water, and discovered a headland in the distance with a dark sky over it, indicating open water on the further side. This point was found to be in latitude  $76^{\circ} 2'$  N. and longitude  $95^{\circ} 55'$  W., and the strait was designated Victoria Channel.

Dr. Kane, the surgeon accompanying Lieutenant De Haven's expedition, about this time fell in with what he conceived to be traces of heavily-laden sledges, and he formed the opinion that Franklin had gone north from Cape Riley as soon as the ice broke up in 1846, and from Wellington Channel had pushed right into the Polar Sea. Accordingly, in this direction the *Advance* made her difficult way as far as possible, Dr. Kane displaying an almost reckless courage, which gained him the sobriquet of "the Mad Yankee." No more relics, however, were then discovered, though afterwards a record found at Point Victory confirmed the accuracy of Kane's conjecture,

and showed that Franklin *had* attempted that course, though driven back by insuperable obstacles.

Several expeditions followed one another in heroic efforts to wrest from the icy North the solemn secrets it so jealously preserved. But no further information was obtained of Franklin and his companions. Whether they had turned homeward and perished in Baffin's Bay; whether, as Kane supposed, they had advanced to the northwest by Wellington Channel; or whether (as was indeed the case) they were ice-bound in Melville Island, were problems, the solution of which seemed destined to remain an impossibility.

The Wellington Channel route was again explored in April, 1852, by Sir Edward Belcher, who had five vessels under his command—the *Assistance*, *Resolute*, *North Star*, *Pioneer* and *Intrepid*. In the same year Lady Franklin despatched the *Rattlesnake* and *Isabel* to Behring Strait to assist Captain Collinson and McClure, while Dr. Rae undertook another survey of Boothia; and Captain Inglefield, with the *Lady Franklin* and *Phenix* repaired to Barrow Strait in support of Sir Edward Belcher. But, as an American writer remarks, it is singular that not one of these expeditions, whether equipped by the government or by private generosity, was despatched to Melville Sound, the very spot where the lost seaman might be expected to be found, if he had carried out the instructions he received from the Admiralty. "It was not," says Mr. Blake, "until five years after the question of Franklin's safety was mooted, that Dr. Rae penetrated to Cape Walker, and beyond that there seemed a fatality brooding over all the explorers which tabooed the only true and proper course to the south and west of Melville Sound. Every place to which he was not sent was thoroughly ransacked; whether he was sent, not a single ship or man was sent.

A melancholy incident must be recorded in connection with Captain Inglefield's expedition. It was accompanied by a gallant and enthusiastic young Frenchman, Lieutenant Bellot, as a volunteer explorer; but, during a terrible gale of wind, he was blown from a piece of floating ice, and drowned (August 18th, 1853).



## CHAPTER VI.

THE SEARCH FOR FRANKLIN—DR. KANE (1852).



DR. ELISHA KENT KANE.

A SECOND American expedition in search of Sir John Franklin was fitted out in 1852, and placed under the command of Dr. Elisha Kane, who had already served in 1850 under Lieutenant De Haven, and was well-fitted for the arduous and honorable post offered him, by his ability, resolution, power of endurance, and enthusiasm. Having accepted the conduct of the enterprise, he proceeded to enlist volunteers and to mature his plans. Believing that the peninsula of Greenland extended far to the northward, approaching the Pole in all probability nearer than any other known land, and that in this way he would obtain easier access both to the east and west, than from Wellington Channel, he resolved on an overland

route in as direct a line north as it was possible to follow. In other words, he proposed to start from the most northerly attainable point of Baffin's Bay, and thence, pressing on toward the Pole, as far as boats or sledges could carry him, to examine the coast lines for vestiges of the lost party.

His little company consisted of eighteen officers and men, including Dr. Hayes, surgeon; August Sonntag, astronomer; and Henry Brooks, first officer.

On May 30, 1852, they left New York in Mr. Grinnell's brig, the *Advance*; in eighteen days reached St. John's, Newfoundland, where they took on board a noble team of Newfoundland dogs, the gift of Governor Hamilton; and thence proceeded to Baffin's Bay.

On the 1st of July they entered the harbor of Fiskernaes, in Danish Greenland, a little colony of fishermen; who deal in cod, and crapefish, seal and shark-oils, and live a life of hardship and enterprise, in which the profits seem utterly incommensurate with the risks. Here Dr. Kane engaged an Esquimaux hunter, one Hans Christian, notably expert both with kajack and javelin; fat, good-natured, and, except when stimulated by the excitement of the hunt, as stolid and impassive as a North American Indian. Thence they kept along the coast of Sukkertoppen, a great depot for reindeer-skins; and on the 10th of July put to sea, steering to the north and west in the teeth of a heavy gale.

Seventeen days later the expedition reached Melville Bay, a basin which is celebrated both for the number of its icebergs and its whales, and has witnessed the loss of many a goodly vessel. Keeping to the westward, Dr. Kane resolved to *double* Melville Bay by keeping outside of the belt of broken land ice; but the voyage proved both difficult and dangerous. The floes gathered round his brig, he anchored her to an iceberg to prevent her from being completely imprisoned. But they had scarcely enjoyed a "breathing spell" before they were startled by a succession of loud, crackling sounds; followed by a shower of ice-fragments, not larger than a walnut. They accepted the warning; hauled in their anchors; and put out into the open just as the face of the berg fell down in ruins, with a report like that of near artillery.



On the 1st of August they made fast to another large berg, "a moving breakwater of gigantic proportions;" this carried them steadily to the north; and when all danger from drifting ice was over, they got under way, and through a tolerably clear channel took their course to the northeast, while the heavens were lighted with the glory of the midnight sun, and the surrounding ice-fields glittered like one great resplendency of gem work—blazing carbuncles, and rubies, and molten gold.

Keeping a mid-course through the bay, Dr. Kane

the coast singularly uninviting. To the west the snow descended with heavy uniformity to the water's edge, and was only here and there relieved by glimpses of the green-clad soil. On the right rose an array of cliffs, the frowning grandeur of which would have fitly dignified the threshold of "the proudest of southern seas." Their average height varied from 1,200 to 1,500 feet, with some of their precipices rising sheer and unbroken for 800 feet.

On Littleton Island Dr. Kane determined to establish his first depot of stores for use on the return voy-



A STEAMER IN THE ICE OFF NEWFOUNDLAND AT PRESENT DAY.

succeeded in reaching the North (or Cape York) Water on the 3d of August, and saw before him Smith Sound, which is now universally recognized as the great highway to the Arctic Pole. On the 5th he passed the "Crimson Cliffs" of Sir John Ross; so called from the mass of rose-red snow which lodges in their ravines and gorges. Hakluyt Island, with its tall spire of gneiss about 600 feet high, was the next station; and on the 6th he sighted Cape Alexander and Cape Isabella, the two promontories which guard the entrance to Smith Sound. He found the aspect of

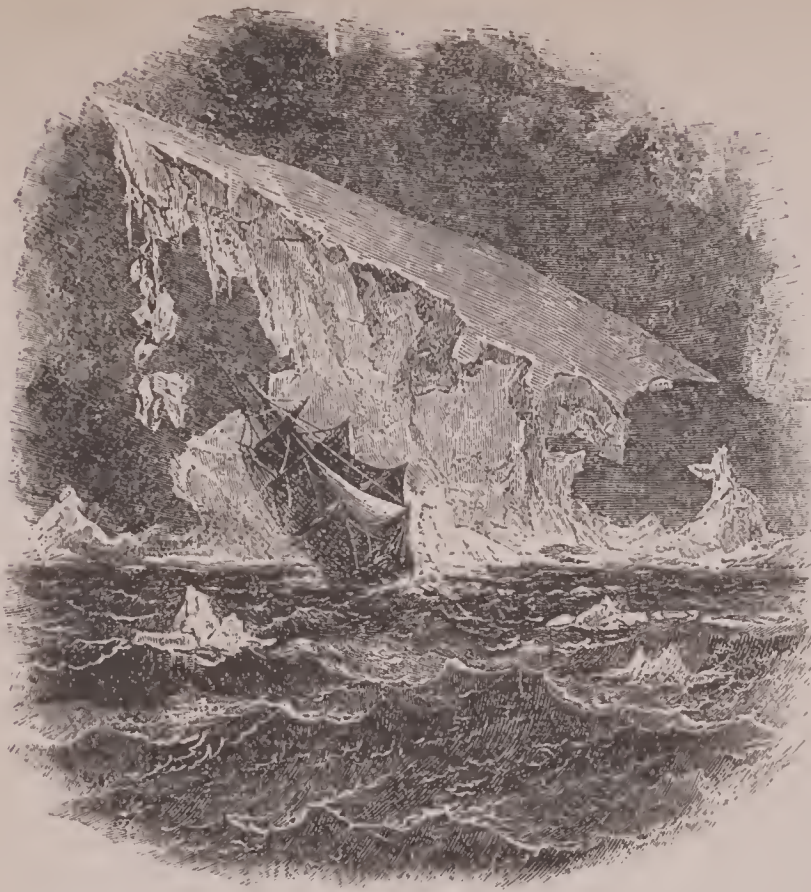
age. The life-boat was loaded with provisions, blankets, and other articles, and then buried. Along her gunwale were placed the heaviest rocks the men could handle; and after the interstices had been filled up with smaller stones and sods of andromeda and moss, sand and water were poured among the layers. All this frozen at once into a solid mass, would be hard enough, it was hoped to resist the claws of the Polar bear.

To the surprise of our explorers, they discovered that they were not the first human beings who had



sought a shelter in this desolate spot. It was evident from a few ruined walls here and there, that it had once been the seat of a rude settlement, and in the little knoll cleared away to cover in the deposit of stores were found some human remains.

Nothing, says Dr. Kane, can be imagined more sad and homeless than these memorials of extinct life. Hardly a vestige of growth was traceable on the bare and ice-scarred rocks, and the huts so closely resembled the broken fragments around that it was almost difficult to distinguish one from the other. Walrus-bones lay about in all directions, showing that walrus-meat had been the principal food



FASTENED TO AN ICEBERG.

of the inhabitants. There were remains, too, of fox and nor-whal, but no signs of seal or reindeer.

The Esquimaux, unable to restore their dead to the embrace of their mother earth, seat them as in the attitude of repose, with the knees drawn close to the body, and then enclose them in a sack of skins. The implements used in life are grouped around, they are covered with a rude dome of stones, and a cairn is piled above. Thus a cenotaph is formed which remains intact for generation after generation. The Esquimaux never profane the rest-

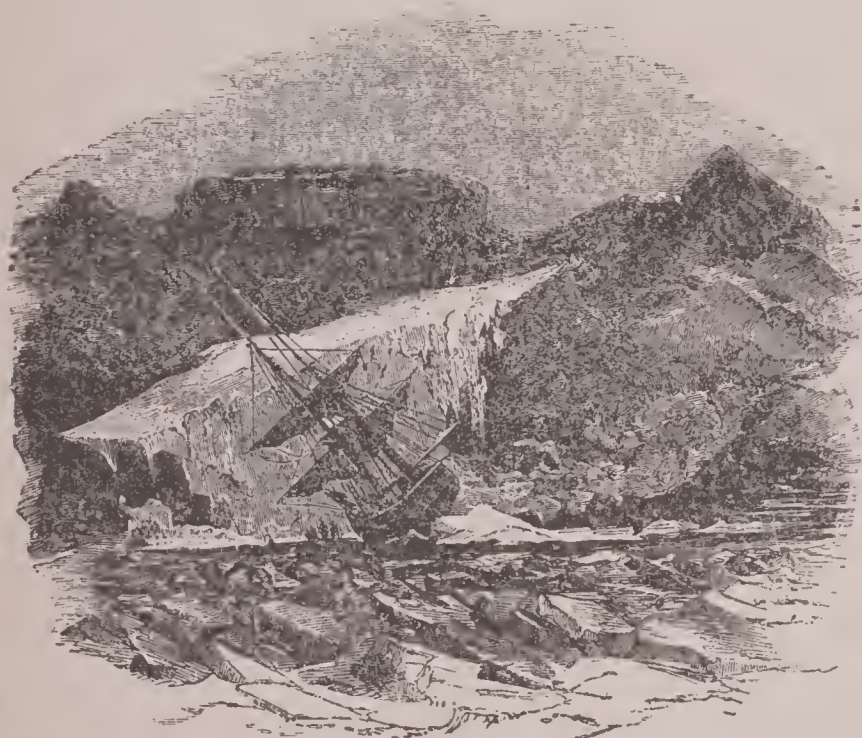
ing place of the dead. Continuing his adventurous career, Dr. Kane pressed through the drifting



THE SUN AT MIDNIGHT.



ice to some distance beyond Cape Lifeboat Cove and took shelter in a beautiful little bay, landlocked from east to west, and accessible only from the north, which figures conspicuously in his narrative under the name of Refuge Harbor. It was some time before the ice broke up sufficiently to permit of his effecting his escape; and, even after he had once more got out into the channel, he had a daily fight with bergs and floes. At one time, while anchored off a rocky island, which he called "Godsend Ledge," a perfect hurricane came on, and, though he had three hawsers out they snapped one after the other like mere threads, and the *Advance* drifted to and fro at the mercy of the "wild ice."



THE PARTING HAWSERS.

His only hope of safety lay in mooring close to a berg, and, this effected, the brig was towed along as by a gigantic courser, "the spray dashing over his windward planks, and his forehead ploughing up the lesser ice as if in scorn." Drifting masses, broken up and hurtled together by a tremendous storm, threatened them with destruction, and the explorers were thankful when, on the 22d, the gale abated, and they carried their little vessel into comparatively smooth water, sheltered by the ice-belt which lined the rocky and mountainous coast.

Having secured a haven of safety for the *Advance*, Dr. Kane resolved to make a personal inspection of the coast, in order to select a convenient winter station, from which he might start on his sledge journeys in

the following spring. For this purpose he had caused his best and lightest whale-boat to be fitted with a canvas cover, that rendered it not less comfortable than a tent. A supply of pemmican was packed in small cases, and a sledge taken to pieces stowed away under the thwarts. The boat's crew consisted of Brooks, Bonsall, Sonntag, Riley, Blake, and Morton. Each man had buffalo-robies for his sleeping gear, carried a girdle full of woollen socks to keep them dry by the warmth of the body, and slung a tin cup and a sheath-knife to his belt. A soup-pot and lamp for the mess, and a single extra day suit as common property, completed the outfit.

Leaving Ohlsen in command of the *Advance*, Dr. Kane and his little company pushed off in the *Forlorn Hope*, as she was christened; and, after a cruise of about twenty-four hours, reached the ice belt, where they hauled her up, and stowed her away snugly under the shelter of a large hummock, after which they pushed forward in the sledge.

Their journey across the rugged surface of the ice was by no means without let or hindrance. It is easy to glide over the frozen level which encrusts one of our British lakes or streams in a severe winter, but the icy wastes of the Arctic region are broken up by gullies, water-ways, and hummocks, rendering the traveller's passage one of considerable difficulty. In five days Dr. Kane advanced only forty miles, and, finding the obstacles almost insurmountable, he abandoned the sledge, and the whole party proceeded on foot. With the exception of their instruments, they carried no burden but their pemmican and one buffalo robe. The weather, as yet not far below freezing point,

did not make a tent essential to the bivouac, and, being so lightly equipped, they were able to make twenty to twenty-four miles a day.

On the 5th, they came upon a noble bay, perfectly open, and in strange contrast, therefore, to the ice outside. The cause of this, at the time, inexplicable phenomenon was afterwards found to be a roaring, tempestuous river, which, issuing from a fiord at the inner extremity of the bay, thundered irresistibly over a rugged bed of rocks. This river, which appears to be the largest as yet known in North Greenland, was about three-quarters of a mile wide at its mouth, and sensible to the tidal influence for about three miles. Its course was afterwards traced to an interior glacier, from the base of which it welled in many streams that



flowed into a single channel about forty miles above its mouth.

Here in the heart of the dreary snowscape, the travellers met with an Arctic flower-growth of considerable variety of form and color. The infiltration of the melted snows fed its roots, and the reverberation of the sun's heat from the rocks fostered its delicate life. Amid festuca and other tufted grasses, brightened the purple *lychnis* and sparkled the white stem of the chickweed, together with a graceful *hesperis*, reminding the wanderers of the fragrant wall-flower of our old English gardens.

After fording the river, Dr. Kane called a halt in lat.  $78^{\circ} 52'$  and long.  $78^{\circ} 41' W$ . The next morning, leaving four of his party to recruit themselves, he struck across the northeastern headland, which he named after the great English novelist, Cape William Makepeace Thackeray. It was the last station on the coast of Greenland determined by theodolite observations. About eight miles beyond projected a lofty headland, which Kane named Cape Francis Hawke.

The prospect which Dr. Kane beheld from the high ground in this vicinity was most impressive. It extended beyond the 30th parallel of north latitude. Far off on the left lay the western shore of the Sound, receding towards the dim, misty north. To the right a rolling country led on to a low, dusky, wall-like ridge, which he afterwards recognized as the great Glazier of Humbolt; and still beyond this, reaching northward from the north-northeast, lay the land which now bears the honored name of Washington—its most projecting headland, Cape Andrew Jackson, bearing about fourteen degrees from the farthest hill on the opposite side, Cape John Barrow. All between

was one vast sheet of ice. Close along its shore, almost looking down upon it from the crest of their lofty station, the explorers could see the long lines of hummocks dividing the floes like the trenches of a beleaguered city. Farther out, a stream of icebergs,



THE "ADVANCE" IN PERIL.

increasing in numbers towards the north, presented an almost impenetrable barrier; but beyond these the ice seemed less obstructed and obstructive, and patches of open water glimmered on the distant horizon.



Dr. Kane now led his party back to the brig, resolved to winter in the secure bay he had found for her, and to occupy the dreary months in expeditions to different points, so as to obtain a complete knowledge of the neighboring coast. When the ice broke up in the ensuing summer, he trusted to resume his onward course.

Winter was approaching rapidly. By the 10th of September the thermometer had fallen to  $14^{\circ}$ , and the ice-floes had been welded by newly formed ice into a compact mass with an unbroken surface. About sixty paces north of the ship an iceberg had been



CHRISTIAN OHLSEN.

caught in the toils, was frozen in, and remained the gigantic neighbor of the adventurers as long as they remained in Rensselaer Harbor. "The rocky islets around were fringed with hummocks; and as the tide fell, their sides were coated with opaque crystals of bright white. The birds had gone; the sea-swallows—which abounded when we first reached here—and even the young burgomasters (gulls) that lingered after them, had all taken their departure for the south. Except the snow-birds, these are the last to migrate of all the Arctic birds."

The chief portion of the ship's cargo was now unloaded, and deposited in the store-house on Butler Island. Vigorous efforts were made to increase the

supplies of provisions. Steaks of salt-junk, artistically cut, were strung on lines, "like a countrywoman's dried apples," and soaked in festoons under the ice. The salmon-trout and codfish, purchased at Fisker-naes, were placed in barrels, perforated to permit a constant circulation of water through them. The "pickled cabbage" was similarly treated, after a little potash had been used to neutralize the acid. All these articles were submitted to twelve hours of alternate soaking and freezing, the ice-crust being removed from them previous to each immersion.

A dog-house was also erected on Butler Island; but in reference to it Dr. Kane records a remarkable illustration of the canine character. The Esquimaux dogs could not be persuaded to sleep away from the vessel. They preferred the bare snow, where they could lie within the sound of human voices, to a warm kennel upon the rocks. Strange, he says, that this dog-distinguishing trait of affection for man should show itself in an animal so imperfectly reclaimed from a savage state that he can hardly be caught when wanted.

Dr. Kane's dogs were both Esquimaux and Newfoundlanders. Of the last he had ten, which he was carefully training in a light sledge to drive (unlike the Esquimaux) two abreast, with a regular harness, a breast-collar of flat leather, and a pair of traces. Six of them made a powerful travelling team; and four could carry Dr. Kane and his instruments, for short journeys around the brig with considerable facility.

The sledge was built of American hickory, thoroughly seasoned, and skillfully combined the three paramount considerations of lightness, strength, and diminished friction. It was named the "Little Willie." Another and stronger sledge, made after a model furnished by the British Admiralty, was called the "Faith." It measured thirteen feet in length and four in breadth and could carry fourteen hundred-weight of mixed stores.

An observatory was also erected. The islet on which it stood measured some fifty paces long by forty broad, and rose about thirty feet above the water-line. Here the adventurers raised four walls of granite blocks, cementing them together with moss and water, and the never-failing assistance of frost which converted the most heterogeneous materials into a compact mass. On the whole was laid a substantial timber roof. The pedestals for the support of the various instruments in use consisted of a conglomerate of ice and gravel, well rammed down, while liquid in iron-hooped pemmican casks and quickly hardened into solidity. Adjoining was a magnetic



observatory, with wooden floor as well as wooden roof; and upon the open ice-field, about 140 yards from the ship, a meteorological observatory with thermometers, lanterns, and other appliances.

The perils to which Dr. Kane and his party were

how much farther it extended, for I became quite insensible at the foot of the ladder, and would have sunk had not Mr. Brooks seen my condition and hauled me out.

"When I came to myself, which happily was very soon, I confided my fearful secret to the four men around me—Brooks, Ohlsen, Blake, and Stephenson. It was all-important to avoid confusion. We shut the doors of the galley, so as to confine the rest of the crew and officers aft, and then passed up water from the fire-hole alongside. It was done very noiselessly. Ohlsen and myself went down to the burning deck; Brooks handed us in the buckets, and in less than ten minutes we were in safety. It was interesting to observe the effect of steam upon the noxious gas. Both Ohlsen and myself were greatly oppressed until the first bucket was poured on; but as I did this, directly over the burning coal, raising clouds of steam, we at once experienced relief, the fine aqueous particles seemed to absorb the carbonic acid instantly.

"We found the fire had originated in the remains of a barrel of charcoal, which had been left in the carpenter's room, ten feet from the stores, and with a bulkhead separating it from them. How it had been ignited, it was impossible to know. Our safety was due to the dense charge of carbonic acid gas which surrounded the fire, and the exclusion of atmospheric air. When the hatches were opened, the flames burst out with energy."

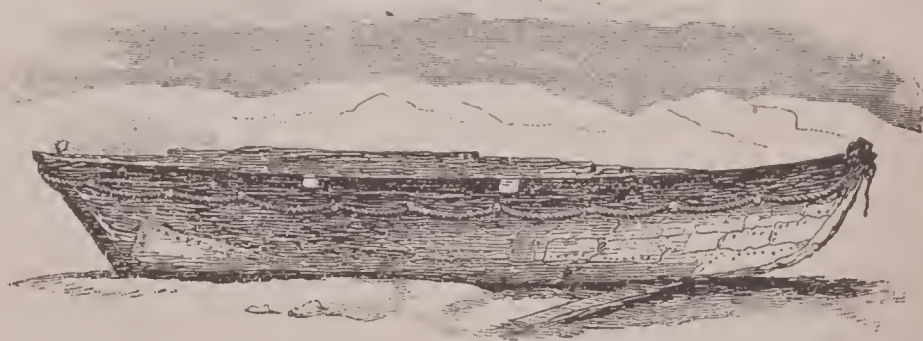
Gradually the severities of an Arctic winter made



RENSSELAER HARBOR.

exposed may be estimated from the following incident which we shall allow him to describe in his own words.

"We have narrowly escaped," he says, "being burned out of house and home. I have given orders that the fires, lit under my own eye, should be regularly inspected; but through a misadventure the watch had for a time pretermitted opening the hatches. As I lowered a lantern, which was extinguished immediately, a suspicious odor reached me, as of burning wood. I descended at once. Reaching the deck of the forecastle, my first glance towards the fires showed me that all was safe there; and, though the quantity of smoke still surprised me, I was disposed to attribute it to the recent kindling. But at this moment, while passing the door of the bulkhead, which leads to the carpenter's room, the gas began to affect me. My lantern went out as if quenched by water; and as I ran by the bulkhead door, I saw the deck near it a mass of glowing fire for some three feet in diameter. I could not tell



THE "FAITH," NOW AT THE BROOKLYN NAVY-YARD.

themselves more and more keenly felt; and those exposed to the weather, notwithstanding every precaution, with difficulty escaped very painful touches of frost-bite. Of a party who had travelled some sixty



miles to establish a *cache*, or depot of provisions north of Cape Bancroft, not a man but was more or less affected. This is not to be wondered at, when we reflect that the temperature had sunk to 25 degrees BELOW zero. The darkness advanced with insidious steadiness; and early in November we read that stars of the sixth magnitude were visible at noonday. The black masses of the hills, with their glaring patches of snow were plain for about five hours of the day; all the rest was gloom. Except upon the island of Spitzbergen, which has the advantage of an insular climate, tempered by ocean currents, no Christian men had wintered in so high a latitude; and they who there con-

pression which is the natural but dangerous result of extreme cold. Frequent excursions were also made, though they did but reveal the completeness of the desolation which surrounded Dr. Kane's winter camp.

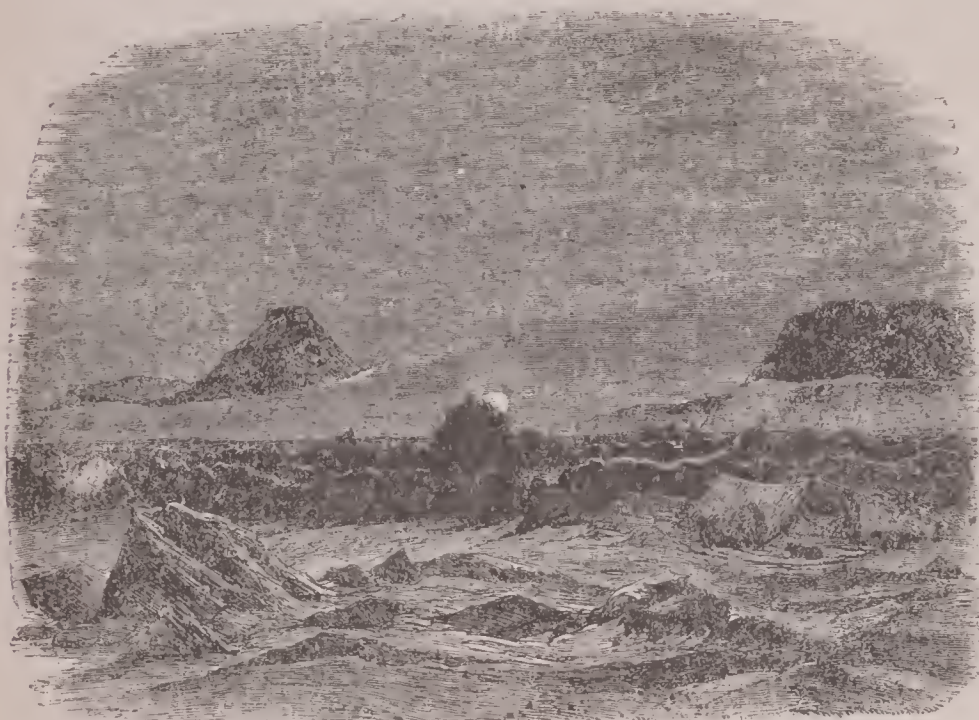
Some idea of the rigor of the climate in the month of February (1854) may be gathered from the following data. The thermometer ranged from 60° to 76° below zero—that is 92° to 107° below freezing point. At such temperature chloric ether became solid and chloroform exhibited a kind of granular skin or pelticle upon its surface. Spirits of naphtha froze at 54°, and oil of sassafras at 49°. The exposed portions of the human body were surrounded with a wreath of

vapor by the quick condensation of its exhalations. The air when inspired, was perceptibly pungent, and imparted a sensation of dryness to the air-passages. It was noticeable that every man involuntarily breathed in, as it were, a guarded manner, with compressed lips.

The first traces of returning light were observed at noon on the 21st of January, when a tint of orange lighted up, very briefly, the southern horizon. Necessarily the influence of the long and intense darkness was very depressing, and was felt even by the lower animals, many of the dogs dying from "a mental disease," clearly due to the absence of light. The symptoms of this disease were

very peculiar, and deserve to be indicated. The more material functions of the poor creatures went on, it would appear, without interruption,—they ate voraciously, retained their strength and slept soundly. But, otherwise, they acted as if suffering from lunacy. They barked frenziedly at nothing, and walked in straight and curved lines with anxious and unwearied perseverance. They fawned on their masters, but without seeming conscious of the caresses being lavished upon them in return. Their most intelligent actions seem automatic; sometimes they clawed you as if seeking to burrow into your sealskins, sometimes they remained for hours in moody silence, and then started off howling as if pursued, and ran up and down for hours.

On the 21st of February, Dr. Kane started forth on



PASSING FROM DAY TO NIGHT.

front the terrors of the north are Russian seamen, injured from earliest years to cold and hardship.

On the 7th of November, we found Dr. Kane calculating that "our darkness has ninety days to run before we shall get back even to the contested twilight of to-day. Altogether our winter will have been sunless for one hundred and forty days."

With various devices these prisoners in the Arctic solitudes endeavored to beguile their monotony. They got up a fancy ball; and published an Arctic newspaper, *The Ice Blink*, with the appropriate motto, "*In tenebris sequare fidem.*" It is true, the circulation was somewhat limited; but the articles were not unworthy of a wider public. A fox-chase, something like the boyish sport of "Hare and Hounds," was occasionally got up, and other measures were adopted to combat a de-



an expedition to welcome back the sun. He forgot his past experiences and present sufferings when once more he beheld the glorious orb of day, and nestled in



GATHERING MOSS.

its glow with a sensation of delight like that of bathing in perfumed water. Wonderful influence of the sun. It seemed to inspire our explorers with new life, fresh strength, fresh hope, body and mind were quickened and recruited by the invigorating rays; and by degrees the adventurers began to think of resuming the work of exploration.

A day in March was spent after the following routine—and the description is generally applicable to the various aspects of the winter life on board the ice-bound ships.

At half-past seven all hands rose, washed on deck, opened the doors for ventilation, and then went below for breakfast. As fuel was scarce, the cooking was done in the cabin. Breakfast—for all fared alike—was hard-tack, pork, stewed apples, frozen like molasses candy, tea and coffee, with a delicate portion of raw potatoes.

Afterwards, those who smoked indulged in their pipes until nine; then all hands turned to—idlers to idle, workers to work; one to his carpenter's bench, another to his "preparations" in canvas; one to play tailor, another to make shoes; one to skin birds, one to tinker and the rest to the "Office."

Let us take a peep at the "Arctic Bureau." One

table, one salt pork lamp, with rusty chlorinated flame; three stools, and as many waxen-faced men with their legs drawn up under them, the deck at zero being too cold for the feet. Each has his department. Kane is writing, sketching and projecting maps; Hayes copying logs and meteorologicals; Sonntag reducing his work at the observatory. The fourth as one of the working members of the hire, has long been defunct—you will find him in bed, or studying "Little's Living Age."

At twelve took place a business round of inspection and orders were issued sufficient to fill up the day with work. Next came the drill of the Esquimaux dogs—a dog trot especially refreshing to their driver whose legs creaked with every kick and whose rheumatic shoulders chronicled every descent of the whip. And in this way the captives went on until dinner time; when their fare was much the same as at breakfast, with the

exception of pickled cabbage and dried peaches being substituted for tea and coffee.

At dinner as at breakfast, raw potatoes were introduced as a hygienic luxury. Yet like most medicine, it was not as appetizing as it was wholesome. Even



SHOOTING SEAL.

when grated nicely, with the ugly red spots omitted and oil freely added as a lubricant, the partakers were fain to shut their eyes and "bolt" it, like Mrs. Squeer's molasses and brimstone at Dotheboys Hall.



Sleep, exercise, amusement, and work at will, carried on the day till six o'clock supper; a meal something like breakfast and something like dinner, only more sparing; and then the officers submitted to Dr. Kane the day's reports.

These dismissed, a game at chess or cards was indulged in, or light reading for those who preferred it. Then the watch was set and "silence reigned around."

A peculiar feature of the Arctic Region is the so-called "ice foot" (Danish eis-fod), a zone of ice which stretches along the shore from the Arctic Circle, far away into the uttermost north. To the south it breaks up under the genial influence of summer, and even as high as Upernavik, or Cape Alexander, it disappears; but in higher latitudes it is a perennial growth, clinging to the bold faces of the cliffs, and following the curves of the bays and the indentations of the rivers.

Though it changes with the seasons, it never wholly passes away—that is to the north of Cape Alexander it forms a broad and secure platform, a level highway of travel, elevated above the grinding ice of the sea, and adapting itself like a shroud to all the sinuosities of the land. It will be convenient to speak of it as the "ice-belt."

Though subject to occasional disruptions by thaws and evaporation it measures the severity of the year by its rate of increase. Rising with the first inclemencies of the fading summer, it enriches with curious and fantastic frost-work the undulating sea-line; a little later, and it is moulded into bolder shapes by collision with the drifting floes and rocks falling from the cliffs which bound it. Before the advent of the rigid winter, it is already solidified into an impenetrable rampart; and so it continues to gain in size and strength with the successive freezing of the tides until summer returns, and its progress is arrested by the melted snows and rushing water torrents.

During Dr. Kane's first winter at Rensselaer Harbor, the ice belt grew to three times the size it had presented on his arrival; and by the middle of March the islands and adjacent shores were blocked up by a continuous icy terrace, nearly 27 feet high and 120 feet wide.

In midwinter, however, the ice-foot is not an unbroken level. Like the floes, it has its barricades; serried and irregular, which can be traversed only with toil and difficulty.

On the 30th of March another party was sent out to establish a depot of provisions, and Kane and the rest of his followers waited only for their return to begin the transit of the bay. Late at night on the 31st,

they were working cheerfully by the glare of their lamps, when a sudden noise of steps was heard above and immediately afterwards, Sonntag, Ohlsen, and Peterson came down into the cabin. If there was something startling in their unexpected arrival, much more startling was their appearance. They were swollen, haggard and scarcely able to speak.

Where were their companions? Behind in the ice—Brooks, Baker, Wilson and Pierce—all frozen and disabled; and they themselves had risked their lives to carry the pitiful news. Where were their comrades lying? With cold white lips they muttered that they could not tell; somewhere in among the hummocks to the north and east; the snow was drifting round them when they parted. "Irish Tom" had gallantly remained to feed and care for them; but of their recovery there was little hope. It was useless to put additional questions; they were too exhausted to be able to rally their ideas.

Not a moment was to be lost. While some attended to the feeble wayfarers, and made ready a hasty meal, others rigged out the "Little Willie," with its tent-like cover and placed in it a supply of pemmican. Then Ohlsen, as the least exhausted was strapped on the sledge, encased in a fur bag, with his legs wrapped in dog skins and eider down and away went the rescue party. It consisted of nine men and Dr. Kane. The thermometer, when they set out, stood at 41°, or 78° below freezing point.

A tower of ice, called by the men "Pinnacly Berg," served as their first landmark; other colossal icebergs, extending in long, beaded lines across the bay, helped to guide them for some distance; and it was not until they had travelled for sixteen hours that they began to lose their way.

That their lost comrades were somewhere in the gloomy area before them, and within a radius of forty miles they knew; but this was to know little. And Mr Ohlsen, who now awoke from a prolonged slumber, with unequivocal signs of mental disturbance, seemed to have lost the bearing of the bergs, which, indeed, in form and color, continually repeated themselves. "Passing ahead of the party," says Kane; (and there is a simple pathos in his simple, unadorned narrative), "and clambering over some rugged ice-piles I came to a long, level floe, which I thought might probably have attracted the eyes of weary men in circumstances like our own. It was a light conjecture, but it was enough to turn the scale for there was no other to balance it. I gave orders to abandon the sledge, and disperse in search of footmarks. We raised our tent, placed our pemmican in *cache*, except a small allow-



ance for each man to carry on his person ; and poor Ohlsen now just able to keep his legs, was liberated from his bag. The thermometer had fallen by this time to  $49.3^{\circ}$ , and the wind was setting in sharply from the northwest. It was out of the question to halt ; it required brisk exercise to keep us from freezing. I could not even melt ice for water ; and at these temperatures any resort to snow for the purpose of allaying thirst was followed by bloody lips and tongue ; it burned like caustic.

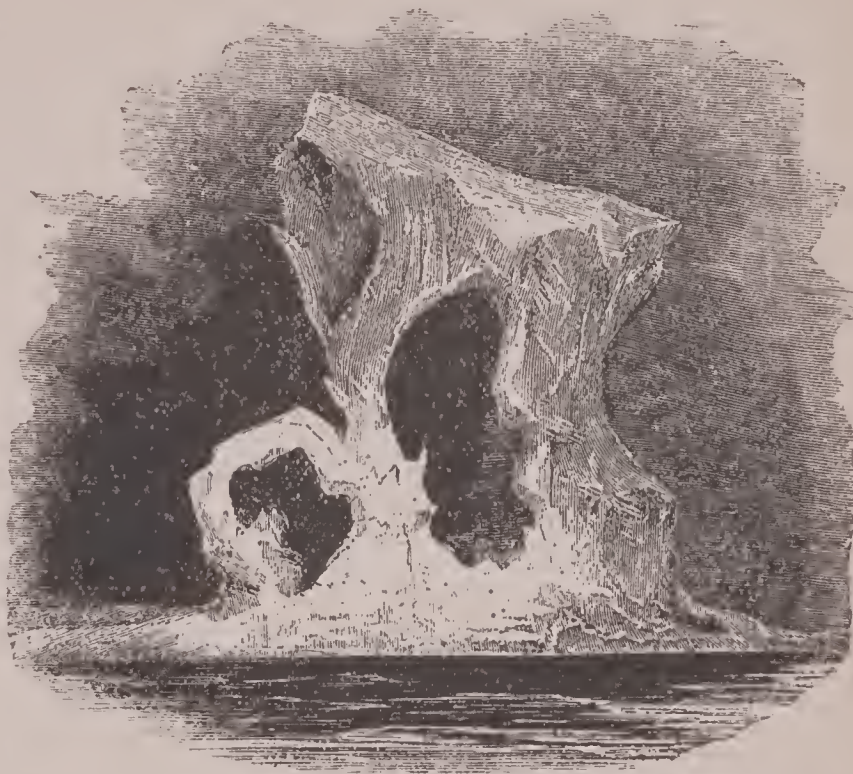
It was indispensable, then, that we should move on, looking out for traces as we went. Yet when the men were ordered to spread themselves, so as to multiply the chances, though they all obeyed heartily some painful impress of solitary danger, or perhaps it may have been the varying configuration of the ice-field, kept them closing up continually into a single group. The strange manner in which some of us were affected I now attribute as much to shattered nerves as to the direct influence of the cold. Men like M'Gary and Bonsall, who had stood out our severest marches, were seized with trembling fits and short breath ; and, in spite of all my efforts to keep up an example of sound hearing, I fainted twice on the snow.

"We had been nearly eighteen hours out without water or food, when a new hope cheered us. I think it was Hans, our Esquimau hunter, who thought he saw a broad sledge track. The drift had nearly effaced it, and we were some of us doubtful at first whether it was not one of those accidental rifts which the gales make in the surface snow. But as we traced it on to the deep snow among the hummocks, we were led to footsteps ; and, following these with religious care, we at last came in sight of a small American flag fluttering from a hummock, and lower down a little masonic banner hanging from a tent pole hardly above the drift. It was the camp of our disabled comrades. We reached it after an unbroken march of twenty-one hours."

They found the little tent almost buried in the snow. When Dr. Kane came up, his companions, who had outstripped him, were standing in silent file on each side of it. With a delicacy of feeling which is almost characteristic of sailors, and seems instinctive to them, they expressed a desire that he should enter alone. As he crawled beneath the tent-curtains, and, coming upon the darkness, heard before him the burst of wel-

come gladness that came from the poor prostrate creatures within, and then for the first time, the cheer without, his weakness and gratitude almost overcame him. "They had expected him," was their exclamation ; "they were sure he would come !"

There were now fifteen souls in all ; the thermome-



PINNACLY BERG.

ter was  $75^{\circ}$  below freezing ; the sole accommodation a tent barely able to contain eight persons ; consequently, more than half of the party were compelled to keep from freezing by walking outside while the others slept. The halt, however, was not prolonged. Each refreshed himself by a two hours sleep, and then the homeward march began.

They carried with them nothing but the tent, furs to protect the rescued party, and food sufficient for a journey of fifty hours. Everything else was abandoned. Two large Buffalo bags, each made of four skins, were doubled up, so as to form a kind of sack lined on each side by fur, closed at the bottom but opened at the top. This impromptu sack was laid on the sledge of which the tent, smoothly folded, served as the floor. The sick, with their limbs sewed up carefully in reindeer skins, were placed upon the bed of buffalo robes, in a half recumbent position ; due warmth was maintained by a plentiful supply of skins and blanket-bags ; and the whole was so lashed together as to leave only a single opening opposite the mouth for breathing.



These preparations completed, a short prayer was uttered and the brave little company started on their return. The difficulties they met with, however, were such as severely tested their courage and endurance. A great part of their track lay among a succession of hummocks, some of them extending in long lines, fifteen or twenty feet in height, and all so steep, that to ascend them was impossible. The sledge had to pursue a winding course in and out of these serious obstacles, frequently driving through gaps filled with recently fallen snow, which hid the fissures and openings in the ice beneath. These, says Kane, were fearful traps to disengage a limb from, for every man was painfully aware that a fracture or even a sprain might cost him his life. In addition the sledge was top-heavy with its load, which weighed not less than 1,100 pounds; while the maimed men could not bear to be lashed down tight enough to secure them against falling off.

Yet, for six hours, the progress of this undaunted band was cheering. They advanced nearly a mile an hour, and reached the new floes before they were absolutely weary. "Our sledge," says Kane, "sustained the trial admirably. Ohlsen, restored by hope, walked steadily at the leading belt of the sledges; and I began to feel certain of reaching our half-way station of the day before, where we had left our tent. But we were still nine miles from it, when almost without premonition, we all became aware of an alarming failure of our energies.

Bonsall and Morton, two of the most robust of Kane's party besought permission to sleep. They declared that they did not feel cold, and that all they wanted was a little repose. Presently Hans was found frozen almost into rigidity under a drift; and Thomas, standing erect, had his eyes closed, and could scarcely articulate. Soon afterwards, John Blake threw himself on the snow and refused to rise. They made no complaint of feeling cold; but it was in vain. Dr. Kane "wrestled, boxed, ran, argued, jeered, or reprimanded;" he found that an immediate halt was unavoidable. Again we quote from his own narrative on the simplicity of which it is not possible to improve:

"We pitched our tent with much difficulty. Our hands were too powerless to strike a fire; we were obliged to do without water or food. Even the whisky had frozen at the men's feet, under all the coverings. We put Bonsall, Ohlsen, Thomas, and Hans, with the other sick men, well inside the tent, and crowded in as many others as we could. Then, leaving the party in charge of Mr. M'Gary, with orders to come on after four hours' rest, I pushed ahead with William God-

frey, who volunteered to be my companion. My aim was to reach the half-way tent, and thaw some ice and pemmican before the others came up.

The floe was of level ice; the walking excellent. I cannot tell how long it took us to make the nine miles, for we were in a strange sort of stupor, and had little apprehension of time. It was probably about four hours. We kept ourselves awake by imposing on each other a continued articulation of words, though such utterances must necessarily have been incoherent. Godfrey and I afterwards retained only a very confused recollection of what preceded our arrival at the tent. We both, however, remember a bear walking leisurely before us and tearing up as he went, a jumper that Mr. M'Gary had improvidently thrown off the day before. He tore it into shreds, and rolled it into a ball, but made no attempt to interfere with our progress.

Godfrey, who had a better eye than myself, looking some miles ahead, could see that our tent was undergoing the same unceremonious treatment. I thought I saw it too, but we were so drunken with cold that we strode on steadily; and, for aught I know, without quickening our pace."

Probably their approach proved the safety of the contents of the tent; for on their arrival they found it uninjured, though the bear had overturned it, and tossed pemmican and buffalo robes into the snow, only a couple of blanket-bags were missing. With great difficulty they raised it, crawled into their reindeer sleeping bags without a word and for three hours enjoyed a dreamy but intense slumber. When Dr. Kane awoke his long beard was a mass of ice, frozen fast to the buffalo skin, and Godfrey had literally to cut him out with his jack-knife.

Water was melted and some soup cooked before the party arrived; they accomplished the nine miles in five hours, were doing well, and, considering the circumstances, in excellent spirits. The day was calm and the sun clear, so that the journey was less onerous than it might have been. The new comers enjoyed the refreshment that had been got ready for them; the crippled were repacked in their robes, and the whole party sped briskly toward the ranges of ice-hummocks that lay between them and the Pinnacy Berg.

These hummocks came properly under the designation of squeezed ice. A great chain of bergs stretching from northwest to southwest, moving with the tides, had compressed the surface-floes, and reared them upon their edges in a singularly fantastic manner.

Desperate efforts were required on the part of our



worn and weary travellers to carry them across the rugged area; desperate indeed, for their partially resuscitated strength failed them anew, and their self-control began to desert them. They could no longer refrain from eating snow; and as a consequence, their mouths swelled and some of them became speechless. They must have perished had not the day been warmed by a clear sunshine, so that the thermometer rose in the shade to within four degrees of zero.

As they grew weaker and weaker their halts necessarily became more frequent; and they would fall into a semi-somnolent condition, on the snow. Strange to say, these brief intervals of slumber proved refreshing, so that Dr. Kane was induced to try the experiment in his own person, taking care that Riley should arouse him at the end of three minutes. Afterwards he timed the men in the same way. They sat upon the runners of the sledge, and fell asleep immediately, but were startled into wakefulness the moment their three minutes had elapsed.

At eight o'clock in the evening the wayfarers were clear of the floes, and gained some new hope at the sight of the well-known Pinnacly Berg. Brandy, which sometimes proves an invaluable resource in emergencies, had already been administered in tablespoon doses. After a final and stronger dram, and a longer rest, they resolved on a last effort to reach the brig, which they attained at one hour after noon.

But words are inadequate to describe their sufferings in this last stage of their journey. They were completely delirious, and no longer entertained any clear apprehension of what was transpiring. Like men in a dream they staggered onward, blindly, uncertainly. From an inspection of their footprints afterwards, it was seen that they had steered a bee-line for the brig, guided by a kind of instinct, for they remembered nothing of their course.

When about two miles from the brig they were met by Peterson and Whipple, with the dog traces, and a supply of restoratives, for which Kane had sent a message in advance by Bonsall. As soon as the frozen, wayworn creatures were safe on board, Dr. Hayes took them under his charge. All were suffering from brain symptoms, functional, not organic, and to be rectified by rest and abundant diet. Ohlsen was for some time affected with blindness and strabismus; two others underwent amputation of parts of the foot, but without dangerous consequences; and two died in spite of every attention. The rescue party had travelled eighty or ninety miles, dragging a heavy sledge for most of the distance. They had been out for seventy-two hours, and halted in all eight hours. The

mean temperature of the whole time, including the noontide hours of three days was about  $41^{\circ}$ , or  $73^{\circ}$  below freezing point. Except at their two halts they had no means of quenching their thirst, and they could at no time intermit vigorous exercise without freezing.

It is difficult to find a severer "experience" of the perils of Arctic winter travelling, when all the circumstances are taken into consideration; and the reader will readily admit that Dr. Kane showed as much decision, sagacity, and heroic resolution, as any leader of a "forelorn hope," marching to certain death under an enemy's fire.

From the depression that followed these events, Kane and his party were roused by a visit from the Esquimaux. The first who presented himself was a tall, powerful, well-built fellow, with swarthy complexion, and piercing black eyes. He wore a hooded *capote* of mixed white and blue fox-skins, arranged with some degree of taste; and booted trousers of white bearskin; which, at the end of the foot, terminated grinly with the animal's claws. This visitor was quickly followed by a number of his countrymen. He showed himself both frank and fearless, and went on board the brig alone. Dr. Kane having satisfied himself that no mischief was intended, invited his companions and some eight or nine at once accepted the invitation. Others, meantime, as if contemplating a long visit, brought up from behind the hummocks as many as fifty-six fine dogs, with their sledges, and secured them within two hundred feet of the brig, thrusting their spears into the ice, and picketing the dogs to them by the sealskin traces; it was evident the animals understood the meaning of the operation. The sledges were made of small pieces of porous bone, very skillfully fastened together by thongs of hide; the runners, which shone like burnished steel, were of highly polished ivory, obtained from the tusks of the walrus.

They had no other weapons than knives which they carried in their boots, and lances, which they lashed to their sledges. The latter was a formidable arm. The staff was made of the horn of the norwhal, or else of the bear's thigh bones lashed together; wood was not used. As for the knives of the party, a single rusty hoop from a current-drifted cask might have furnished them all; but the lancet-shaped tips of the spears were made of steel, and riveted not unskillfully to the tapering bony point. This steel was obtained from the more southern tribes.

When the Esquimaux first came on board, they showed themselves somewhat rude, rough, and unruly. They spoke three or four at a time, to each other and



to their American hosts, laughing heartily at not being understood, and then chattering away as rapidly as before. They were perfect representatives of perpetual motion, going everywhere, trying doors, and forcing their way through dark passages, round casks and boxes, and out into the light again, anxious to touch and handle everything they saw, and soliciting or endeavoring to secrete everything they touched. Dr. Kane found it more difficult to restrain them, as he was anxious they should not suppose him alarmed by their numbers. But their curiosity was so insatiable, that it became necessary at last to use something like force to keep it within proper bounds. Dr. Kane's whole company was mustered, and kept constantly on the alert; but they did their spiriting gently, and the utmost good humor prevailed. The Esquimaux still continued to run in and about the vessel, bringing in provisions, and carrying them out again to their dogs on the ice; and this occupied them until the afternoon, when they lay down to sleep like tired children. Dr. Kane ordered them to be made comfortable in the hold; and a large buffalo robe was spread for their convenience in the vicinity of the galley store.

In this store blazed a fire of coal; and the new fuel, too hard for blubber, too soft for freestone, filled them with amazement. They saw, however, that it would work quite as efficiently as seals' fat, and borrowing an iron pot and some melted water, proceeded to parboil a couple of pieces of walrus-meat. The main portion of their meal—that is five pounds of meat a head—they preferred to eat raw. It was observed that they did not all eat together, but each man as he listed; and when he had done eating he lay down to sleep, his raw chunk of meat lying beside him. When he awoke, he took a few additional bites, and then went to sleep again! They did not lie down as Europeans do, but adopted a sitting posture, with the head drooping on the breast, and snoring (most of them) famously. In the morning they departed, after selling four of their dogs and all the walrus-meat they could spare for some needles and beads and a supply of old cask staves.

At the end of April, leaving ten of his party in the brig, Kane, with seven men, started on an exploring expedition, resolved to follow up the ice-belt to the Great Glacier of Humboldt, there obtain a replenishment of pemmican from the *caches* made in the previous October, and then make an attempt to cross the ice to the American shore. This was to be the "crowning expedition" of the campaign—to attain the Ultima Thule of the Greenland shore, measure

the dreary frozen waste that spread between it and the unknown West, and the mysterious regions beyond. It was not carried out in its entirety, but it resulted, nevertheless, in geographical discoveries of great interest.

Let us trace the eastern coast line of Smith Sound, now acknowledged to be the sole highway to the Pole, beginning at Refuge Harbor.

Cape Alexander may be taken as the westernmost point of Greenland. Thence the shore strikes nearly north and south, "like the broad channel of which it is the boundary;" but on reaching Refuge Inlet it bends nearly at a right angle, and runs from west to east until it has crossed the 65th meridian. Two indentations occur between the cape and the inlet, the first near the Etah Settlement, which was visited in 1855 by a rescue expedition under Lieutenant Hartstene and bearing his name; the other, the Lifeboat Cove, of Dr. Kane's charts. In both, the great dead-white glaciers strike down to the water line having slowly forced their way from the gorges among the rocky hills of the interior.

Besides these gaps or indentations, the coast line is varied by a series of headlands differing much in character, and at Cape Hatherton sinking into undulating hills. All along it lies an archipelago of islands, where the eider, the glaucous gull, and the tern breed in countless numbers.

Cape Hatherton is a lofty and conspicuous mass of porphyritic rock.

North of Refuge Harbor the coast assumes a very different character. There are no deep bays, no descending glaciers; and the deep fords and inlets do not reappear until we approach Rensselaer Harbor. There the geological structure changes also, and the cliffs are distinguished by their bold diversity of form, reminding the spectator of ruined temples, or the shattered facades of glorious cathedrals and minsters. Their height sometimes exceeds one thousand feet.

This grand and impressive structure extends as far as the Great Glacier except where diversified by the sweep of four great bays, each communicating with deep gorges, which are watered by streams from the inland ice-fields. The average elevation of the tableland bordered by these cloven, rugged, precipitous cliffs is about 900 feet; but far away in the direction of the *mer de glaces* of the unknown interior it rises to 1,900 feet.

According to Dr. Kane, the most picturesque portion of the North Greenland coast is met with between Cape George Russell and Dallas Bay. Here



the warm red sandstones contrast agreeably with the cold whiteness of the snow-fields and the ice-plains, and into the dreary Arctic landscapes, introduce something of the seasonal changes of more genial climates. The influence of the seasonal changes has worked on the cliffs till they have assumed the appearance of jointed masonry, which the narrow, top-most layer of greenstone caps with mimic battlements.

A remarkable feature of this part of the coast was distinguished by our explorers as the "Three Brother Turrets." The rocky precipice rose at the mouth of a sun-lighted gorge into the fantastic resemblance of a castle flanked with triple towers, boldly and clearly defined.

Beyond this point, in latitude  $70^{\circ}$ , a single cliff of green stone rose from a crumbled base of sandstones, like the boldly chiseled rampart of an ancient fortress. At its northern extremity, on the edge of a profound ravine, which the action of the ice and water excavated in the strata, stands a solitary column or minaret-tower as sharply finished as if wrought by the chisel of the sculptor. The length of the shaft was estimated at 480 feet, and its pedestal or plinth was 280 feet high.

"I remember well," writes Dr. Kane, "the emotions of my party as it first broke upon our view. Cold and sick as I was, I made a sketch of it, which may have interest for the reader, though it scarcely suggests the imposing dignity of this magnificent landmark. Those who are happily familiar with the writings of Tennyson, and have communed with his spirit in the solitudes of the wilderness will comprehend the impulse that inscribed the scene with his name."

Beyond this Tennyson monument lies the Advance Archipelago; and to the east extends the Great Glacier that has received the name of the illustrious German philosopher and traveller, Humbolt. It seems impossible to convey in words any adequate idea of the vast frozen river which connects instead of dividing the two continents of America and Greenland. Its curved face from Cape Agassiz to Cape

Forbes, measures fully sixty miles in length, and presents a grand wall or front of glistening ice, kindled here and there into dazzling glory by the sun. Its form is that of a wedge, the apex lying inland, at perhaps "not more than a single day's railroad travel from the Pole." Thus it passes away into the centre of the Greenland continent, which is occupied by one deep, unbroken sea of ice, twelve hundred miles in length, that received a perpetual increase from the water-shed of vast snow-mantled mountains. A frozen sea, yet a sea in constant motion, rolling onward slowly, laboriously, but surely, to find an outlet at each fiord or valley, and to load the seas of Greenland and the Atlantic with mighty icebergs, until, having attained the northern limit of the land it overwhelms, it pours out a mighty congealed torrent into the unknown Arctic space!

The discoveries which we have thus summarized were not made without much suffering on the part of Dr. Kane and his followers. The heroic leader, indeed, almost succumbed to the terrible hardships of this adventurous journey, and was carried back to the sledge in so prostrated a condition that recovery seemed hopeless. It may be doubted, indeed, whether his strength was ever thoroughly recruited, though the skill and attention of Dr. Hayes, and his own undaunted spirit, rescued him from the jaws of death. All the men were more or less afflicted, and in the middle of June only three were able to do duty, and of the officers Dr. Hayes alone was on his feet.

The Great Glacier had effectually terminated the labors of the explorers in that direction; and Dr. Kane determined that their future search should be made to the north and east of Captain Inglefield's Cape Sabine. He still cherished a belief that some, at least of the hardier members of Sir John Franklin's expedition must be alive, and, having made their way to the open spot of some tidal eddy, had set bravely to work, under the teachings of an Esquimau, or one of their own whalers, and trapped the fox, speared the bear, and killed the seal, walrus, and whale.



## CHAPTER VII.

DR. HAYES—1860 AND 1869.



ISAAC I. HAYES.

DR. HAYES, who had been the surgeon that accompanied Dr. Kane's famous expedition, was after his return to America unwearied in advocating renewed voyages of discovery and exploration in the Arctic regions. He fixed on Grinnell Land as his base of operations, and the method of advancing when that land was reached was by sledge passages. His energy and perseverance met due appreciation, and a sufficient sum was placed at his disposal to enable him to fit out a schooner named the *United States*, in which, accompanied by Mr. Sonntag as astronomer, Mr. Raddiffe, assistant astronomer, and a crew of twelve, he sailed from Boston July 6, 1860. The voyage to the coast of Greenland was uneventful, and on the 30th the ship entered the Arctic circle, and on August 6th dropped anchor in the harbor of Proven,

one of the Danish settlements. On the 12th, the explorers were at Upernavik where three native hunters and an interpreter were engaged. From this spot, the limit of safe navigation, the hardships of the voyage began. On the 21st a halt was made at a place named Tessussak where four teams of dogs were taken on board, and on the 23d, the *United States* entered Melville Bay. Early in September she was compelled to enter Hartstene Bay, where Dr. Hayes resolved to establish his headquarters. Dr. Hayes writes:

"The duty of preparing the schooner for our winter home devolved upon Mr. McCormick, with the carpenter and such other assistance as he required. After the sails had been unbent, the yards sent down, and the topmasts housed, the upper deck was roofed in—making a house eight feet high at the ridge and six and a half at the side. A coating of tarred paper closed the cracks, and four windows let in the light while it lasted, and ventilated our quarters. Between decks there was much to do; the hold, after being floored, scrubbed, and whitewashed, was converted into a room for the crew; the cook-stove was brought down from the galley and placed in the centre of it under the main hatch, in which hung our simple apparatus for melting water from the snow or ice. This was a funnel-shaped double cylinder of galvanized iron connecting with the stove-pipe, and was called the "snow melter." A constant stream poured from it into a large cask, and we had always a supply of the purest water, fully ample for every purpose.

"Into these quarters the crew moved on the first of October, and the out-door work of preparation being mainly completed, we entered then, with the ceremony of a holiday dinner, upon our winter life. And the dinner was by no means to be despised. Our soup was followed by an Upernavik salmon, and the table groaned under a mammoth haunch of venison, which was flanked by a ragout of rabbit and a venison pasty."

The sun sank on October 15th, and next day the



doctor tried his hand at driving his dog team. This account is spirited: "I drove up the Fiord in the morning, and have returned only a short time since. This Fiord lies directly north of the harbor, and it forms the termination of Hartstene Bay. It is about six miles deep by from two to four wide. Jensen was my driver, and I have a superb turn-out—twelve dogs and a fine sledge. The animals are in most excellent condition—every one of them strong and healthy; and they are very fleet. They whirl my Greenland sledge over the ice with a celerity not calculated for weak nerves. I have actually ridden behind them

dogs are just twenty feet from the forward part of the runners.

"The team is guided solely by the whip and voice. The strongest dogs are placed on the outside, and the whole team is swayed to right and left according as the whip falls on the snow to the one side or the other, or as it touches the leading dogs, as it is sure to do if they do not obey the gentle hint with sufficient alacrity. The voice aids the whip, but in all emergencies the whip is the only real reliance. Your control over the team is exactly in proportion to your skill in the use of it. The lash is about four feet



SLIDGE DRIVING WITH DOG TEAMS,

over six measured miles in twenty-eight minutes; and, without stopping to blow the team, have returned over the track in thirty-three. We harness the dogs each with a single trace, and these traces are of a length to suit the fancy of the driver—the longer the better, for they are then not so easily tangled, the draught of the outside dogs is more direct, and, if the team comes upon thin ice, and breaks through, your chances of escape from immersion are in proportion to their distance from you. The traces are all of the same length, and hence the dogs run side by side, and, when properly harnessed, their heads are in a line. My traces are so measured that the shoulders of the

longer than the traces, and is tipped with a 'cracker' of hard sinew, with which a skilful driver can draw blood if so inclined; and he can touch either one of his animals on any particular spot that may suit his purpose. Jensen had to-day a young refractory dog in the team, and, having had his patience quite exhausted, he resolved upon extreme measures. 'You see dat beast?' said he. 'I takes a piece out of his ear;'—and sure enough, crack went the whip, the hard sinew wound round the tip of the ear and snapped it off as nicely as with a knife.

"This long lash, which is but a thin tapering strip of raw seal-hide, is swung with a whip-stock only



two and a half feet long. It is very light and is consequently hard to handle. The peculiar turn of the wrist necessary to get it rolled out to its destination is a most difficult undertaking. It requires long and patient practice. I have persevered, and my perseverance has been rewarded; and, if I am obliged to turn driver on emergency, I feel equal to the task, but I fervently hope that the emergency may not arise which requires me to display my skill.

"It is the very hardest kind of hard work. That merciless lash must be going continually; and it must be merciless or it is of no avail. The dogs are quick to detect the least weakness of the driver, and measure him on the instant. If not thoroughly convinced that the soundness of their skins is quite at his mercy, they go where they please. If they see a fox crossing the ice, or come upon a bear track, or 'wind' a seal, or sight a bird, away they dash over snow-drifts and hummocks, pricking up their short ears and curling up their long bushy tails for a wild, wolfish race after the game. If the whip-lash goes out with fierce snap, the ears and the tails drop, and they go on about their proper business; but woe be unto you if they get the control. I have seen my own driver only to-day sorely put to his metal, and not until he had brought a yell of pain from almost every dog in the team did he conquer their obstinacy. They were running after a fox, and were taking us toward what appeared to be unsafe ice. The wind was blowing hard, and the lash was sometimes driven back into the driver's face—hence the difficulty. The whip, however, finally brought them to reason, and in full view of the game, and within a few yards of the treacherous ice, they came first down into a limping trot and then stopped, most unwillingly. Of course, this made them very cross, and a general fight—fierce and angry—now followed, which was not quieted until the driver had sailed in among them and knocked them to right and left with his hard hickory whip-stock. I have had an adventure with the same team, and know to my cost what an unruly set they are, and how hard it is to get the mastery of them; but once mastered, like a spited horse, they are obedient enough; but also, like that noble animal, they require now and then to have a very positive reminder as to whom the obedience is owing.

"Wishing to try my hand, I set out to take a turn round the harbor. The wind was blowing at my back, and when I had gone far enough, and wanted to wheel round and return, the dogs were not so minded. There is nothing they dislike so much as to face the wind; and, feeling very fresh, they were evidently

ready for some sport. Moreover, they may, perhaps, have wanted to see what manner of man this new driver was. They were very familiar with him personally, for he had petted them often enough; but they had not before felt the strength of his arm.

After much difficulty I brought them at last up to the course, but I could keep them there only by constant use of the lash; and since this was three times out of four blown back into my face, it was evident that I could not long hold out; besides, my face was freezing in the wind. My arm, not used to such violent exercise, soon fell almost paralyzed, and the whip-lash trailed behind me on the snow. The dogs were not slow to discover that something was wrong. They looked back over their shoulders inquiringly, and, discovering that the lash was not coming, they ventured to diverge gently to the right. Finding the effort not resisted, they gained courage and increased their speed; and at length they wheeled short round, turned their tails to the wind, and dashed off on their own course, as happy as a parcel of boys freed from the restraints of the school-room, and with the wild rush of a dozen wolves. And how they danced along and barked and rejoiced in their short-lived liberty!

"If the reader has ever chanced to drive a pair of unruly horses for a few hours, and has had occasion to find rest for his aching arms on a long, steep hill, he will understand the satisfaction which I took in finding the power returning to mine. I could again use the whip, and managed to turn the intractable team among a cluster of hummocks and snow-drifts, which somewhat impeded their progress. Springing suddenly off, I caught the upstander and capsized the sledge. The points of the runners were driven deeply into the snow, and my runaways were anchored. A vigorous application of my sinew-tipped lash soon convinced them of the advantages of obedience, and when I turned up the sledge and gave them the signal to start they trotted off in the meekest manner possible, facing the wind without rebelling, and giving me no further trouble. I think they will remember the lesson—and so shall I.

"These dogs are singular animals, and are a curious study. They have their leader and their sub-leaders—the rulers and the ruled—like any other community desiring good government. The governed get what rights they can, and the governors bully them continually in order that they may enjoy security against rebellion, and live in peace. And a community of dogs is really organized on the basis of correct principles. As an illustration,—my teams are under the control of a big aggressive brute, who sports a



dirty red uniform with snuff-colored facings, and has sharp teeth; he possesses immense strength, and his every movement shows that he is perfectly conscious of it. In the twinkling of an eye he can trounce any dog in the whole herd; and he seems to possess the faculty of destroying conspiracies, cabals, and all evil designings against his stern rule. None of the other dogs like him, but they cannot help themselves; they are afraid to turn against him, for when they do so there is no end to the chastisements which they receive. Now Oosisoak (for that is his name) has a rival, a huge, burly fellow, with black uniform and white collar. This dog is called Karsuk, which expresses the complexion of his coat. He is larger

advantage; for, if the present relations of things were disturbed, my community of dogs would be in a state of anarchy. Oosisoak would go into exile, and would die of laziness and a broken heart, and great and bloody would be the feuds between the rival interests, led by Karsuk and Erebus, before it was decided which is the better team.

"Oosisoak has other traits befitting greatness. He has sentiment. He has chosen one to share the glory of his reign, to console his sorrows, and to lick his wounds when fresh from the bloody field. Oosisoak has a queen; and this object of his affection, this idol of his heart, is never absent from his side. She runs beside him in the team, and she fights for him



THE OPEN SEA.

than Oosisoak, but not so active nor so intelligent. Occasionally he has a set-to with his master; but he always comes off second best, and his unfortunate followers are afterwards flogged in detail by the merciless red-coat. The place of Oosisoak, when harnessed to the sledge, is on the left of the line, and that of Karsuk on the right.

"There is another powerful animal which we call Erebus, who governs Sonntag's team as Oosisoak governs mine, and he can whip Karsuk, but he never has a bout with my leader except at his peril and that of his followers. And thus they go along, fighting to preserve the peace, and chawing each other up to maintain the balance of power; and this is all to my

harder than any one of his male subjects. In return for this devotion he allows her to do pretty much as she pleases. She may steal the bone out of his mouth, and he gives it up to her with a sentimental grimace that is quite instructive. But it happens sometimes that he is himself hungry, and he trots after her, and when he thinks that she has got her share he growls significantly; whereupon she drops the bone without even a murmur. If the old fellow happens to be particularly cross when a reindeer is thrown to the pack, he gets upon it with his forefeet, begins to gnaw away at the flank, growling a wolfish growl all the while, and no dog dare to come near until he has had his fill except Queen Arkadik (for by



that name is she known), nor can she approach except in one direction. She must come alongside of him, and crawl between his fore legs and eat lovingly from the spot where he is eating."

During October preparations were made for inland exploration, and on October 22d, the travellers set out for the glacier to whose summit they arrived on the following day. The sides of this moving ice-mass were rough, but the centre was comparatively smooth, and they were able to make thirty to twenty miles a day, when a fall of the temperature to  $34^{\circ}$  below zero and a fierce gale of wind drove them back to their winter quarters. This was the first successful attempt to penetrate the interior over this inland ice-field.

The winter was passed in short exploring excursions and in hunting expeditions, but the voyagers were saddened by the death of Mr. Sonntag, who, late in December, started for Whale Sound. He passed Cape Alexander without any trouble, and was on his way to Northumberland Island, when, feeling chilly, he left the sledge and ran ahead of the dogs. He thus came unawares on thin ice, which broke beneath his weight, and was rescued by his attendant, Hans. He at once set out to return to a place of shelter, but when he arrived at Sorfalik, where there was a hut, he was stiff and speechless, and next day died. Not till the following March was the body recovered and interred by his cruising messmates.

By that time all the arrangements for a journey northward were completed, the sun had returned, and on the 16th March Dr. Hayes started to explore the track and determine whether it were better to follow Kane's route on the Greenland coast or cross the Sound and seek to reach a favorable base on Grinnell Land. Passing with his sledge Sunrise Point and Point Hatherton, Hayes discovered a cairn perched on a conspicuous point and in it a glass vial, containing this record:

"The U. S. steamer *Arctic* touched here and examined thoroughly for traces of Dr. Kane and his associates, without finding anything more than a vial, with a small piece of cartridge-paper with the letters 'O. K. Aug. 1853,' some matches, and a ship's rifle-ball. We go from this unknown point to Cape Hatherton for a search.

"H. J. HARTSTENE,

"Lieut. Comdg. Arctic Expedition.

"8 P. M. August 16, 1855.

"P. S. Should the U. S. bark *Release* find this, she will understand that we are bound for a search at Cape Hatherton.

H. J. H."

The view from this point was not encouraging, the ice was very rough, and jammed against the shore and piled up in great ridges.

The view decided his course of action. Cairn Point would be his starting-point if he crossed the Sound, and a most convenient position for a depot of supplies in the event of being obliged to hold up on the Greenland coast. Accordingly, he took from the sledges all of the provisions except what was necessary for a six days' consumption, and discovering a suitable cleft in a rock, deposited it therein, covering it over with heavy stones, to protect it from the bears, intending to proceed up the coast for a general inspection of the condition of the ice on the Sound.

These various operations consumed the day; so they fed the dogs and dug into another snow-bank, and got through another night after the fashion of Arctic travellers, which is not much of a fashion to boast of. They slept and did not freeze, and more than this they did not expect.

The next day's journey was made with light sledges, but it was much more tedious than the two days preceding; for the track was rough, and during the greater part of the time it was as much as the dogs could do to get through the hummocked ice with nothing on the sledge but our little food and sleeping gear. As for riding, that was entirely out of the question. After nine hours of this sort of work, during which they made not over twenty miles, they were well satisfied to draw up to the first convenient snow-bank for another nightly burrow. In the shelter they constructed it was noticed with surprise that the temperature could not be made to rise above  $30^{\circ}$ , and various conjectures as to the cause were made, but on taking the thermometer out into the open air, it sank rapidly to  $68\frac{1}{2}^{\circ}$  below zero, that is  $100\frac{1}{2}^{\circ}$  below the freezing point of water. This is one of the lowest temperatures on record, yet in the profound calm of the air and the blazing sunlight it was perceptible to the senses.

This experimental journey proved that the road along the Greenland coast was wholly impracticable. The condition of the ice was very different from what it was in 1853-54. Then the coast ice was mainly smooth, and the hummocks were not met until they had gone from ten to twenty miles from the shore. Now there was no such belt. The winter had set in while the ice was crowding upon the land, and the pressure had been tremendous. Vast masses were piled up along the track, and the whole sea was but one confused jumble of ice-fragments, forced up by the pressure to an enormous height, and frozen



together in that position. The whole scene was the Rocky Mountains on a small scale; peak after peak, ridge after ridge, spur after spur, separated by deep valleys, into which they descended over a rough declivity, and then again ascended on the other side, to cross an elevated crest and repeat the operation. The travelling was very laborious. It was but an endless clambering over ice-masses of every form and size.

On the homeward journey they halted at Cairn Point, and then drove on to the schooner out of which they transferred to Cairn Point, the stores needful for their summer journey across Smith Sound.

"My field party," Dr. Hayes writes, "consisted of every available officer and man in the schooner, twelve in number. We were all ready to start at seven o'clock; and when I joined them on the ice beside the schooner their appearance was as picturesque as it was animated. In advance stood Jensen, impatiently rolling out his long whip-lash, and his eight dogs, harnessed to his sledge, 'The Hope,' were as impatient as he. Next came Knorr with six dogs and the 'Perseverance,' to the upstander of which he had tied a little blue flag bearing this, his motto, '*Toujours prêt.*' Then came a lively group of eight men, each with a canvas belt across his shoulder, to which was attached a line that fastened him to the sledge. Alongside the sledge stood McCormick and Dodge, ready to steer it among the hummocks, and on the sledge was mounted a twenty-foot metallic life-boat with which I hoped to navigate the Polar Sea. The mast was up and the sails were spread, and from the peak floated our boat's ensign, which had seen service in two former Arctic and in one Antarctic voyage, and at the masthead were run up the Masonic emblems. Our little signal-flag was stuck in the stern-sheets. The sun was shining brightly into the harbor, and everybody was filled with enthusiasm, and ready for the hard pull that was to come. Cheer after cheer met me as I came down the stairway from the deck. At a given signal Radcliffe, who was left in charge of the vessel, touched off the 'swivel;' 'March,' cried McCormick, crack went the whips, the dogs sprang into their collars, the men stretched their 'track ropes,' and the cavalcade moved off."

For several days after Cairn Point was reached a severe storm kept the party prisoners, but at the end of the tenth day they set out to cross the Sound with a moderate load. The ice was rough, and all idea of taking a boat across had to be abandoned, and on the 26th of April they had only advanced thirty miles. On the 26th Dr. Hayes writes in his diary:

"I feel to-night that I am getting rapidly to the end of my rope. Each day strengthens the conviction, not only that we can never reach Grinnell Land, with provisions for a journey up the coast to the Polar Sea, but that it cannot be done at all. I have talked to the officers, and they are all of this opinion. They say the thing is hopeless. Dodge put it thus: 'You might as well try to cross the City of New York over the house-tops!' They are brave and spirited men enough, lack not courage nor perseverance; but it does seem as if one must own that there are some difficulties which cannot be surmounted. But I have in this enterprise too much at stake to own readily to defeat, and we will try again to-morrow.

April 27th.

"Worse and worse! We have to-day made but little progress, the sledge is badly broken, and I am brought to a stand-still. There does not appear to be the ghost of a chance for me. Must I own myself a defeated man? I fear so.

"I was never in all my life so disheartened as I am to-night; not even when, in the midst of a former winter, I bore up with my party through hunger and cold, beset by hostile savages, and, without food or means of transportation, encountered the uncertain fortunes of the Arctic night in the ineffectual pursuit of succor.

"Smith Sound has given me but one succession of baffling obstacles. Since I first caught sight of Cape Alexander, last autumn, as the vanishing storm uncovered its grizzly head, I have met with but ill-fortune. My struggles to reach the west coast were then made against embarrassments of the most grave description, and they were not abandoned until the winter closed.

"Now the ice is infinitely worse than it then was, and I have been forced to the conclusion that the attempt to cross the Sound with sledges has resulted in failure; and that my only hope to accomplish that object now rests in the schooner. Having the whole of the season before me, I think that I can, even without steam, get over to Cape Isabella, and work thence up the west shore, and, even should I not be able to get as far up the Sound as I once hoped, yet I can, no doubt, secure a harbor for next winter in some eligible position. Coming to this conclusion, I have determined to send back the men, and I have given McCormick full directions what to do, in order that the vessel may be prepared when the ice breaks up and liberates her. He is to cradle the schooner in the ice by digging around her sides; repair the dam-



age done last autumn, and mend the broken spars, and patch the sails.

"For myself, I stay to fight away at the battle as best I can with my dogs.

"The men have given me twenty-five days of good service, and have aided me nearly half-way across the Sound with about eight hundred pounds of food; and this is all that they can do. Their work is ended.

"Although the chance of getting through with the dogs looks hopeless; yet, hopeless though the prospect, I feel that, when disembarassed of the men, I ought to make one further effort. I have picked my companions, and have given them their orders. They will be Knorr, Jensen, and sailor McDonald—plucky men all, if I mistake not, and eager for the journey. And now when I think of this new trial which I shall make to-morrow, my hopes revive; but when I remember the fruitless struggles of the past few days and think of these hummocks, with peak after peak rising one above the other, and with ridge after ridge in endless succession intersecting each other at all angles and in all directions, I must own that my heart almost fails me and my thoughts incline me to abandon the effort and retreat from what everybody, from Jensen down, says cannot be done, and rely upon the schooner for crossing the Sound. But I have not failed yet! I have fourteen dogs and three picked men left to me; and now, abandoning myself to the protecting care of an all-wise Providence, who has so often led me to success and shielded me from danger, I renew the struggle to-morrow with hope and determination. Away with despondency!"

In such spirits did they set out, but their progress was still slow, and on May 5th the entry in the diary is, "Little progress to record. Affairs look rather blue," then day after day are the words "Battling away as before," "Still battling away," "At the same hopeless work," till, on May 11th, the cheerful line occurs, "In camp at last, and as happy as we can be who have achieved success."

The journey across the Sound from Cairn Point was unexampled in Arctic traveling. The distance from land to land, as the crow flies, did not exceed eighty miles; and yet the journey had consumed thirty-one days—but little more than two miles daily. The track, however, which they were forced to choose, was often at least three times that of a straight line; and since almost every mile of that tortuous route was traveled over three and often five times, in bringing up the separate portions of the

cargo, our actual distance did not probably average less than sixteen miles daily, or about five hundred miles in all, between Cairn Point and Cape Hawks. The last forty miles, made with dog-sledges alone, occupied fourteen days—a circumstance which will, of itself, exhibit the difficult nature of the undertaking, especially when it is borne in mind that forty miles to an ordinary team of dogs, over usually fair ice, is a trifling matter for five hours, and would not fatigue the team half so much as a single hour's pulling of the same load over such hummocks, as confronted us throughout this entire journey.

They did not halt longer at Cape Hawks than was needful to rest the teams, when they commenced the journey up the coast. The first day's march was across the wide bay between Cape Hawks and Napoleon. Owing to the conformation of the coast, the bay had been sheltered from the winds, and the snows of the winter, in consequence, lay loose upon the surface of the ice. They had, however, no alternative but to cross the bay, for to go outside was to plunge again into the hummocks. The snows had accumulated to the depth of more than two feet, through which the wading was very toilsome. The land-ice was reached next morning, and a brisk run to the north was made, where, at the furthest point reached in 1854, a camp was made. They were now in Kennedy Channel, and as they proceeded experienced, in even a greater degree than in South Sound, the immense force of the ice pressure.

The ice was much less rough than that which we had crossed in Smith Sound, owing to the old floes having been less closely impacted while that part of the sea was freezing up during the last autumn or winter. Hence, there was much more new ice. It was evident that the sea had been open to a very late period; and, indeed, like the water off Port Foulke, had not closed up completely until the spring. It was unusual to see the ice so thin and washed away thus early in the season. Small patches of open water were visible at points where the conformation of the coast warranted the conclusion that an eddy of the current had operated upon the ice more rapidly than in other places.

Hayes was struck with the circumstance that no land was visible to the eastward, as it would not have been difficult through such an atmosphere to distinguish land at the distance of fifty or sixty miles. It would appear, therefore, that Kennedy Channel is something wider than hitherto supposed. To the northeast the sky was dark and cloudy, and gave evidence of water; and one of the crew, who



watched the rapid advance of the season with solicitude, was not slow to direct attention to the "water-sky."

The temperature of the air was strangely mild, and, indeed, distressingly so for travelling, although it possessed its conveniences in enabling them to sleep upon the sledges in the open air with comfort. The lowest temperature during the day was  $20^{\circ}$ ; while, at one time, it rose to the freezing-point—the sun blazing down while they trudged on under their heavy load of furs. The day seemed really sultry. To discard furs and travel in shirt-sleeves was, of course, the first impulse; but to do so added to the load on the sledges, and it was of the first importance that the dogs should be spared every pound of unnecessary weight; so each one carried his own coat upon his back, and perspired after his own fashion.

The distance accomplished amounted by this time to four hundred and fifty miles from the schooner, and Dr. Hayes began to congratulate himself on his success, when a serious accident to his strongest man, Jansen, troubled him exceedingly as he not only lost his services, but had to leave McDonald in charge of him while he pushed on alone with Knorr. The result of this brave undertaking we subjoin in Dr. Hayes's own language:

My purpose now was to make the best push I could, and, travelling as far as my provisions warranted, reach the highest attainable latitude and secure such a point of observation as would enable me to form a definite opinion respecting the sea before me, and the prospects of reaching and navigating it with a boat or with the schooner. I had already reached a position somewhat to the northward of that attained by Morton, of Dr. Kane's expedition, in June, 1854, and was looking out upon the same sea from a point probably about sixty miles to the northward and westward of Cape Constitution, where, only a month later in the season, his further progress was arrested by open water.

It only remained for me now to extend the survey as far to the north as possible. By the judicious husbanding of my resources I had still within my hands ample means to guarantee a successful termination to a journey which the increasing darkness and extent of the water-sky to the northeast seemed to warn me was approaching its climax.

Our first day's journey was not particularly encouraging. The ice in the bay was rough and the snow deep, and, after nine hours of laborious work, we were compelled to halt for rest, having made, since setting out, not more than as many miles. Our

progress had been much retarded by a dense fog which settled over us soon after starting, and which, by preventing us from seeing thirty yards on either side, interfered with the selection of a track; and we were, in consequence, forced to pursue our course by compass.

The fog clearing up by the time we had become rested, and the land being soon reached, we pursued our way along the ice-foot with much the same fortune as had befallen us since striking the shore above Cape Napoleon. The coast presented the same features—great wall-sided cliffs rising at our left, with a jagged ridge of crushed ice at our right, forming a white fringe, as it were, to the dark rocks. We were, in truth, journeying along a winding gorge or valley, formed by the land on one side and the ice on the other; for this ice-fringe rose about fifty feet above our heads, and, except here and there where a cleft gave us an outlook upon the sea, we were as completely hemmed in as if in a cañon of the Cordilleras. Occasionally, however, a bay broke in upon the continuity of the lofty coast, and as we faced to the westward along its southern margin, a sloping terraced valley opened before us, rising gently from the sea to the base of the mountains, which rose with imposing grandeur. I was never more impressed with the dreariness and desolation of an Arctic landscape. Although my situation on the summit of the Greenland *mer de glace*, in October of the last year, had apparently left nothing unsupplied to the imagination that was needed to fill the picture of boundless sterility, yet here the variety of forms seemed to magnify the impression on the mind, and to give a wider play to the fancy; and as the eye wandered from peak to peak of the mountains as they rose one above the other, and rested upon the dark and frost-degraded cliffs, and followed along the ice-foot, and overlooked the sea, and saw in every object the silent forces of Nature moving on through the gloom of winter and the sparkle of summer, now, as they had moved for countless ages, unobserved save by the eye of God alone, I felt how puny indeed are all men's works and efforts; and when I sought for some token of living thing, some track of wild beast—a fox, or bear, or reindeer—which had elsewhere always crossed me in my journeyings, and saw nothing but two feeble men and our struggling dogs, it seemed indeed as if the Almighty had frowned upon the hills and seas.

Since leaving Cairn Point we had looked most anxiously for bears; but although we had seen many tracks, especially about Cape Frazer, not a single



animal had been observed. A bear, indeed, would have been a Godsend to us, and would have placed me wholly beyond anxiety respecting the strength of the dogs, as it would not only have put new life into them, but it would have given them several days of more substantial rations than the dried beef which they had been so long fed upon.

After a ten hours' march, we found ourselves once more compelled to camp; and four hours of the following day brought us to the southern cape of a bay which was so deep that, as in other cases of like obstruction, we determined to cross over it rather than to follow the shore line. We had gone only a few miles when we found our progress suddenly arrested. Our course was made directly for a conspicuous headland bounding the bay to the northward, over a strip of old ice lining the shore. This headland seemed to be about twenty miles from us, or near Latitude  $82^{\circ}$ , and I was very desirous of reaching it; but, unhappily, the old ice came suddenly to an end, and, after scrambling over the fringe of hummocks which margined it, we found ourselves upon ice of the late winter. The unerring instinct of the dogs warned us of approaching danger. They were observed for some time to be moving with unusual caution, and finally they scattered to right and left, and refused to proceed further. This behavior of the dogs was too familiar to me to leave any doubt as to its meaning; and moving forward in advance, I quickly perceived that the ice was rotten and unsafe. Thinking that this might be merely a local circumstance, resulting from some peculiarity of the current, we doubled back upon the old floe and made another trial further to the eastward. Walking now in advance of the dogs they were inspired with greater courage. I had not proceeded far when I found the ice again giving way under the staff, with which I sounded its strength, and again we turned back and sought a still more eastern passage.

Two hours consumed in efforts of this kind, during which we had worked about four miles out to sea, convinced me that the ice outside the bay was wholly impassible, and that perseverance could only end in disappointment; for if we happened to break through, we should not only be in great jeopardy but would, by getting wet, greatly retard, if not wholly defeat our progress to the opposite shore. Accordingly we drew back toward the land, seeking safety again upon the old floe, and hauling then to the westward, endeavored to cross over further up the bay; but here the same conditions existed as outside, and the dogs resolutely refused to proceed as soon as we left the old

ice. Not wishing to be defeated in my purpose of crossing over, we held still further west and persevered in our efforts until convinced that the bay could not be crossed, and then we had no alternative but to retreat to the land-ice and follow its circuit to our destination.

With the view of ascertaining how far this course was likely to carry us from a direct line, I walked, while the dogs were resting, a few miles along the shore until I could see the head of the bay, distant not less than twenty miles. To make this long *détour* would occupy at least two if not three days,—an undertaking not justified by the state of our provisions—and we therefore went into camp, weary with more than twelve hours' work, to await the issue of further observation on the morrow.

Surprised at the condition of the ice in the bay, I determined to climb the hill above the camp, with the view of ascertaining the probable cause of our being thus baffled; and to ascertain if a more direct route could not be found further to the eastward than that by the land-ice of the bay; for it was now clear that it was only possible to continue our journey northward in one or the other of these directions. The labors of the day made it necessary, however, that I should procure some rest before attempting to climb the hill to such an elevation as would enable me to obtain a clear view of the condition of the ice to the opposite shore.

After a most profound and refreshing sleep, inspired by a weariness which I had rarely before experienced to an equal degree, I climbed the steep hill-side to the top of a ragged cliff, which I supposed to be about eight hundred feet above the level of the sea.

The view that I had from this elevation furnished a solution of the cause of my progress being arrested on the previous day,

The ice was everywhere in the same condition as in the mouth of the bay, across which I had endeavored to pass. A broad crack, starting from the middle of the bay, stretched over the sea, and uniting with other cracks as it meandered to the eastward, it expanded as the delta of some mighty river discharging into the ocean, and under a water-sky, which hung upon the northern and eastern horizon, it was lost in the open sea.

Standing against the dark sky at the north, there was seen in dim outline the white sloping summit of a noble headland—the most northern known land upon the globe. I judged it to be in Latitude  $82^{\circ} 30'$ , or four hundred and fifty miles from the North Pole. Nearer, another bold cape stood forth; and nearer



still the headland, for which I had been steering my course the day before, rose majestically from the sea, as if pushing up into the very skies a lofty mountain peak, upon which the winter had dropped its diadem of snows. There was no land visible except the coast upon which I stood.

The sea beneath me was a mottled sheet of white and dark patches, these latter being either soft decaying ice or places where the ice had wholly disappeared. These spots were heightened in intensity of shade and multiplied in size as they receded, until the belt of the water-sky blended them altogether into one uniform color of dark blue. The old and solid floes (some a quarter of a mile, and others miles, across) and the massive ridges and wastes of hummocked ice which lay piled between them and around their margins, were the only parts of the sea which retained the whiteness and solidity of winter.

I reserve for another time all discussion of the value of the observations which I made from this point. Suffice it here to say that all the evidences showed that I stood upon the shores of the Polar Basin, and that the broad ocean lay at my feet; that the land upon which I stood, culminating in the distant cape before me, was but a point of land projecting far into it, like the Ceverro Vostochnoi Noss of the opposite coast of Siberia; and that the little margin of ice which lined the shore was being steadily worn away; and within a month, the whole sea would be as free from ice as I had seen the north water of Baffin Bay—interrupted only by a moving pack, drifting to and fro at the will of the winds and currents.

To proceed further north was, of course, impossible. The crack which I have mentioned would, of itself, have prevented us from making the opposite land, and the ice outside the bay was even more decayed than inside. Several open patches were observed near the shore, and in one of these there was seen a flock of *Dovekie*. At several points during our march up Kennedy Channel I had observed their breeding places, but I was not a little surprised to see the birds at this locality so early in the season. Several burgomaster-gulls flew overhead, making their way northward, seeking the open water for their feeding grounds and summer haunts. Around these haunts of the birds there is never ice after the early days of June.

And now my journey was ended, and I had nothing to do but make my way back to Port Foulke. The advancing season, the rapidity with which the thaw was taking place, the certainty that the open water

was eating into Smith Sound as well through Baffin Bay from the south, as through Kennedy Channel from the north, thus endangering my return across to the Greenland shore, warned me that I had lingered long enough.

It now only remained for us to plant our flag in token of our discovery, and to deposit a record in proof of our presence. The flags were tied to the whip-lash, and suspended between two tall rocks, and while we were building a cairn, they were allowed to flutter in the breeze; then, tearing a leaf from my note-book, I wrote on it as follows:

"This point, the most northern land that has ever been reached, was visited by the undersigned, May 18, 19, 1861, accompanied by George F. Knorr, travelling with a dog-sledge. We arrived here after a toilsome march of forty-six days from my winter harbor, near Cape Alexander, at the mouth of Smith Sound. My observations place us in Latitude  $81^{\circ} 35'$ , Longitude  $70^{\circ} 30'$ , W. Our further progress was stopped by rotten ice and cracks. Kennedy Channel appears to expand into the Polar Basin; and, satisfied that it is navigable at least during the months of July, August, and September, I go hence to my winter harbor, to make another trial to get through Smith Sound with my vessel, after the ice breaks up this summer.

"I. I. HAYES.

"May 19, 1861."

This record being carefully secured in a small glass vial which I brought for the purpose, was deposited beneath the cairn; and then our faces were turned homewards. But I quit the place with reluctance. It possessed a fascination for me, and it was with no ordinary sensations that I contemplated my situation; with one solitary companion, in that hitherto untrodden desert; while my nearness to the earth's axis, the consciousness of standing upon land far beyond the limits of previous observation, the reflections which crossed my mind respecting the vast ocean which lay spread out before me, the thought that these ice-girdled waters might lash the shores of distant islands where dwell human beings of an unknown race, were circumstances calculated to invest the very air with mystery, to deepen the curiosity, and to strengthen the resolution to persevere in my determination to sail upon this sea and to explore its furthest limits; and as I recalled the struggles which had been made to reach this sea—through the ice and across the ice—by generations of brave men, it seemed as if the spirits of these Old Worthies came to encourage me, as their experience had already guided me; and I felt that I had within my grasp "the great and nota-



ble thing" which had inspired the zeal of sturdy Frobrisher, and that I had achieved the hope of matchless Parry.

It may be interesting to know what the flags thus given to the Arctic breezes at "Hayes's Furthest" were: They were a small United States flag (boat's ensign), which had been carried in the South Sea Expedition of Captain Wilkes, U. S. N., and afterwards in the Arctic Expeditions of Lieut. Comg. DeHaven and Dr. Kane; a little United States flag which had been committed to Mr. Sonntag by the ladies of the Albany Academy; two diminutive Masonic flags intrusted to Dr. Hayes—one by the Kane Lodge, of New York, the other by the Columbia Lodge, of Boston; and the Expedition signal-flag, bearing the Expedition emblem, the Pole Star—a crimson star, on a white field—also a gift from fair hands. Being under the obligation of a sacred promise to unfurl all these flags at the most northern point attained, it was his pleasing duty to carry them with him—a duty rendered none the less pleasing by the circumstance that, together, they did not weigh three pounds.

On June 3, the doctor was on board the schooner once more, having travelled not less than 1,300 miles since April 3d, and not less than 1,600 since his first setting out in March. He came back fully convinced that a route to the Pole free enough for steam navigation is open every summer from Cape Frazer. His further course was dependent on the condition of the schooner, which had been seriously injured. It was found that the damage which the vessel had sustained, was so great that to strike ice again would be sure to sink her. It was resolved therefore to return home, refit, and add steam-power to his resources, and the doctor, after stating at length the reasons for this determination, and the experiences which confirmed, he adds:

"I have secured the following important advantages for the future, and, with these I must, perforce, rest satisfied for the present:

"1. I have brought my party through without sickness, and have thus shown that the Arctic winter of itself breeds neither scurvy nor discontent.

"2. I have shown that men may subsist themselves in Smith Sound independent of support from home.

"3. That a self-sustaining colony may be established at Port Foulke, and be made the basis of an extended exploration.

"4. That the exploration of this entire region is practicable from Port Foulke—having from that starting-point pushed my discoveries much beyond

my predecessors, without any second party in the field to coöperate with me, and under the most adverse circumstances.

"5. That, with a reasonable degree of certainty, it is shown that, with a strong vessel, Smith Sound may be navigated and the open sea reached beyond it.

"6. I have shown that the open sea exists."

On July 13th, the ship was fairly out, truly afloat after ten months imprisonment in the ice, and leaving Smith Sound he proceeded on his course to Whale Sound which Hayes was desirous of exploring. This he did thoroughly and then stood southward, making land on the morning of August 12th at Horse's Head, whence after three days of groping through fog he cast anchor in Upernavik Bay. Here he writes:

"While the chain was yet clicking in the hawse-hole, an old Dane, dressed in seal-skins, and possessing a small stock of English and a large stock of articles to trade, pulled off to us with an Esquimaux crew, and, with little ceremony, clambered over the gangway. Knorr met him, and, without any ceremony at all, demanded the news.

"Oh! dere's plenty news."

"Out with it, man! What is it?"

"Oh! de Sout' States dey go agin de Nort' States, and dere's plenty fight."

I heard the answer, and, wondering what strange complication of European politics had kindled another Continental war, called this Polar Eumæus to the quarterdeck. Had he any news from America?

"Oh! 't is 'merica me speak! De Sout' States, you see! dey go agin de Nort' States, you see! and dere's plenty fight!"

Yes, I did see! but I did not believe that he told the truth, and awaited the letters which I knew must have come out with the Danish vessel, and which were immediately sent for to the Government House.

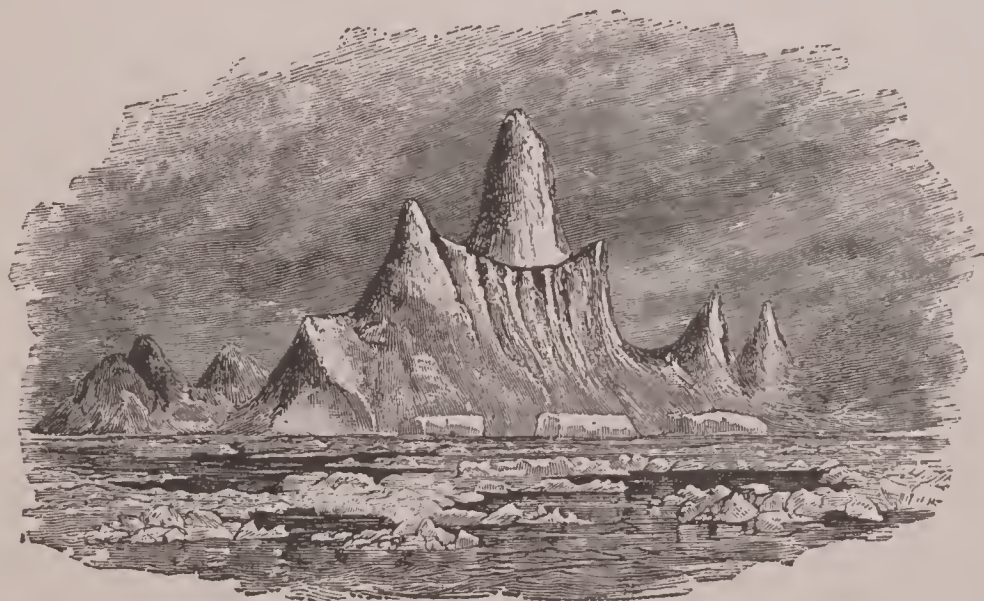
This news appeared incredible and it was not till the explorers arrived at Halifax that they heard of the struggle that had been going on for months between the South and the North. Four days more brought them to Boston and then Hayes in the face of the duty which every man owes, in his own person, to his country when his country is in peril, could not hesitate. Before he had reached my cabin while his friends were yet in ignorance of his presence in the bay, he had resolved to postpone the execution of the task with which he had charged himself; and he closed as well the cruise as the project, by writing a letter to the President, asking for immediate employment in the public service, and offering the schooner to the government for a gun-boat.



Not till 1869 was Dr. Hayes able to resume his task, and then he set out on the steam yacht *Panther* for the Land of Desolation, as he appropriately names Greenland. The first spot touched at was Julianshaab, on the arm of the sea, named Licsfiord, after its discoverer, Lik the Red, in the year 983. On these fiords the formation of the great glacier system of the country was examined. His impression of one of their rivers of ice is thus given: "Picture to yourself the rapids of Niagara frozen to their very depths, the falls, the river, the great Lake Erie everywhere converted into ice, you, yourself, erect upon the rapids, and you will have, on a *reduced* scale, the sea of ice that lay before me." The journey across it was dangerous, especially at first, owing to the numerous crevasses or cracks of unfathomable depth which crossed each other in every direction, but, the border once crossed, the road became easier. On all sides brooks meandered over the icy plain, often mingling and plunging downwards in torrents into some deep chasm as they found their way to the fiord. When they had again reached the ship, they were startled by a sharp, formidable explosion, and, to their wondering gaze, the projecting angle of the

glacier was seen to be breaking up. At the lower end, a tower nearly two hundred feet high was wholly separated from it, then, as if the sea-bottom had collapsed beneath it, it sank little by little, and its pinnacles disappeared in a whirlpool of foam and vapor.

Continuing her course up Baffin Bay, the *Panther* met her first field of ice, a broad white and blue plain with a narrow pass through it, winding and curving till a barrier of ice blocked the way. "Charge full steam on it," the captain cried, and the *Panther* dashed into the mass, struck it as she quivered from stem to stern, then paused. She returned a hundred yards, then, with all steam up, rushed onward, then falls back, plunges and darts forward till a channel was opened and an expanse of water was reached. We need not describe the other incidents of the voyage, which was not one of geographical discovery properly so called. In leaving the harbor of Upernavik she had the courage to charge an iceberg. The men on deck were thrown off their feet, but she fell back uninjured; six times were these ram-like blows repeated, and then the mountain of crystal split, and the two parts struck the sea, as they toppled over with a sound like thunder.





## CHAPTER VIII.

## THE GERMAN EXPEDITION—1869-1870.

THE Germans, at the suggestion of the ancient geographer, Dr. Petermann, began to take an active part in Arctic explorations, and, after an unsuccessful voyage in 1868, an expedition, consisting of two ships the *Germania* and the *Hansa*, was fitted out and placed under the command of Captain Koldewey. On June 15, 1869, the two ships sailed from Bremerhaven, sighted Jan Magen on July 9th, and on July 19th, owing to a mistake in reading signals, the *Hansa* parted from her consort and sailed westward. Progress now became difficult, the ship if not beset with ice was unable to approach the land on account of the thick, compact floes. On August 25th she was near Sabroe Island, only thirty-three miles distant, as was learned afterward, from where her sister ship the *Germania* was lying, and on September 2d the blockade of the ship by ice began. We quote the words of the German report for the details:

“As late as the 7th of September, the voyagers still flattered themselves that they might reach the coast. It was distant only five and thirty miles, and at noon, in clear weather, its outlines could be clearly traced. To the west of the ice-fields (the *Hansa* lay to the east of it) was visible a wide area of open water, frozen white with foam, which seemed to extend quite to the coast. A pedestrian excursion westward upon the ice-plain, following up its southern boundary, would show us whether the channel on that side was navigable throughout, and communicated with this open water. Marching through thick and frozen snow, we reached a huge block of ice, which we christened the Devil's Thumb; from its summit we could command an extensive prospect. Seated astride of it we warmed ourselves with a little of the liquor Bode had been thoughtful enough to bring with him. Two other enormous masses enclosing a narrow and picturesque passage were called the Brandenburg Gate.

“We contrived to escalate one of these masses by mounting on one another's shoulders, and then cutting steps in the ice with a knife. Hildebrandt made a sketch of the little scene. Unfortunately the canal

we had seen proved too narrow for the vessel, and soon the ice in it and on the other side of the field set firmer together.

“On the following days the cold was very keen, sinking from 23° to 5°, and at last, on the 14th of September, the *Hansa* was completely blocked up by ice in Lat. 73° 25' 7" N., and Long. 18° 39' 5" W. The southwest drift aided by the wind, which blew continuously from the north, carried the ship southward along with the ice; and in this way we traversed thirteen miles from the 12th to the 14th.

“On the 9th a great ice-floe closed up the channel by which the *Hansa* had entered, and we made it fast with cables to protect ourselves from the floating masses. Some days later a north-northwest gale set the ice again in motion, and broke our hawsers. The ice accumulated behind the ship raising it a foot and a half.

“On a neighboring ‘field’ we caught sight of a she bear and her cub. A boat at once put off in pursuit. The two animals soon caught sight of us, and began to trot along the edge of the ice by the side of the boat—the mother grinding her teeth and licking her beard. We fired as soon as we could take a steady aim and the bear fell upon the snow mortally wounded. We repeatedly cast a noose over the young one, which continued to lick and caress her mother in the most affectionate manner; but each time she contrived to extricate herself, and at last she took to flight, groaning and crying. Though wounded by a musket-ball she succeeded in effecting her escape.

“On the evening of the same day (the 9th of September, 1869), at 10 o'clock, some aurora gleams appeared in the west shooting towards the south. Radiant sheaves and phosphorescent bands mounted towards the zenith; but the phantasmagoria quickly vanished. At the same time we heard the young bear howling dismally on the spot where it had lost its mother. The fresh bear meat proved most opportune, and tasted excellent either as a roast joint or in chops. On the 12th, from the east, as before—leaving the land behind them—came another couple of



bears. The old one met the same fate as the previous wanderer; the cub was caught and chained to the ice-anchor. Its alarm was great, but it eagerly devoured its mother's flesh which we threw to it. We raised a snow-house for its accommodation, and provided it with a couch of shavings, which, however, the young bear, like a true native of the Arctic seas, treated with contempt, and preferred camping in the snow. A few days later it disappeared, along with the chain, which must have become loosened from the anchor, and, no doubt, the poor creature perished. The weight of the iron itself was sufficient to sink it.

"The *Hansa* was visited by other Arctic guests. With a brisk wind came a couple of snow-white foxes, a proof that the ice had formed a continuous bridge to the shore. With tails high in the air they trotted or galloped across the ice-fields like small craft sailing before the wind. One of them was shot by Mr. Hildebrandt, and the next day 'smoked upon the board.'

"We thought first of wintering on the ice in the boats covered in with sails, but this sort of shelter would not have afforded a satisfactory guarantee for health and life. How would it defend us against the wind, the severe cold, the hurricanes of snow, with which we were certain to be assailed throughout the winter? How could we have prepared in it that warm nourishment which is absolutely indispensable to existence during an Arctic winter? We returned to the idea of constructing a hut upon the ice-field, and without delay proceeded to build the house of coal which had already been proposed. Bricks made with coal are excellent material, because they absorb the moisture and reflect the warmth back into the interior. For mortar we used water and snow. For the roof we agreed to take, in case of a final establishment on the ice through the loss of the ship, the covering which protected the deck of the *Hansa* from snow. As a preliminary precaution, however, we turned our attention to the preservation of our boats, and over these we erected sheds of frozen snow.

"On the 8th, after the works necessary for the construction of huts were completed, a storm of snow arose, which, if of earlier occurrence, would certainly have rendered them impossible, and in five days both house and ship were entirely buried. Such piles of snow were accumulated between the middle of the deck and the ship's stern, that the sailors could with difficulty make their way to their cabin. The new ice which surrounded the *Hansa* was so loaded with snow that it yielded under the weight, and fell away from

the sides of the ship, so that the sea-water penetrated between the ice and the snow.

"On the 13th the storm subsided; the weather again became calm and serene, and we found ourselves fifteen miles northeast of the Liverpool coast, which appeared like a rocky mountain, with shining ridges and precipitous walls thickly covered with snow. But in the valleys and gorges the snow lay in heavy masses. We could clearly distinguish the north point, Cape Gladstone, and Reynolds Islands, as well as a great part of the coast stretching southward until lost in the misty distance.

"From the 5th to the 14th of October the drift had been very great. In that period we had fallen back, as it were, seventy-two miles towards the south-south-east.

"We frequently saw flights of crows which seem to sojourn all the winter on this coast. Once only did we catch sight of a gull and a falcon. The narwhal also made known their presence in the ice-covered channel by their occasional 'blowing.'

"On the morning of the 17th three of the crew, namely, Bowe, the carpenter, and the seamen Büttner and Heyne, undertook, in the fine weather, to gain the land, which was only ten miles distant. They started at seven o'clock, the weather being very calm, and the temperature at zero. After crossing some dangerous places in the newly-formed ice, they arrived at some continuous fields which enabled them to approach within four miles of the shore. After a three hours' journey they were constrained to halt, because a belt of water, about two miles wide, parallel to the coast and skirting the 'ice-foot' or shore-ice, which was nearly of equal breadth, obstructed the route. About one o'clock, when snow had begun to fall, and the wind to blow from the north; they regained the ship; we were growing anxious for their safety, and welcomed them gladly on their return.

"October the 18th.—Three words will describe the state of the weather—cold, calm, and clear; but about eight o'clock in the morning the ice began to drive and press around the ship. At regular intervals underneath, the ice, like rolling waves, ground and cracked; now with a sound like the clang of doors, now like a contention of human voices, and now like the shrill creak of a drag on the wheel of a locomotive. The obvious immediate cause of the pressure was that our field had turned in drifting, and had come into collision with the littoral ice. The two floes in front of the vessel received the chief momentum, so that for a time the *Hansa* was safe, though trembling violently, and though her masts swayed to



and fro, like reeds in a wind. As the field underwent some long and dangerous fissures, the whale-boat seemed in danger; and we brought it, therefore, alongside the ship. Towards evening the weather cleared, but our presentiment that this day was but a precursor of evil to come proved on the following day only too correct. We made our preparations, however, for either event—that is, for wintering in the house in case the ship was destroyed; or for remaining in the ship if she escaped. We completed the provisioning of the house, especially in bread and fuel. We collected the fur clothing and carried upon deck the remaining stores. In removing these we discovered a numerous colony of rats, which, finding themselves very well off, had not yet thought it necessary to abandon the vessel. By evening the pressure had ceased, and the air was calm, though foggy; a halo formed round the moon, which was then at its full, and illuminated with a pale and fitful light the mountains and plains of ice. In the cabin and in the crew's lodging we amused ourselves by playing at cards. The catastrophe we feared was preceded on the morning of the 19th by a hurricane from the north-northwest, accompanied by a fall of snow, and much severe pressure from the ice. So thick was the air, we could not see the coast. The first heavy shock occurred at ten in the morning, but we felt no particular alarm until noon, when the constantly approaching and heaped-up masses of ice, about four feet thick, had broken up on the starboard side of the vessel, and drove heavily against the outer side. The stern of the schooner rose slightly, and but for the high ice blocks would have risen higher; she had to bear, therefore, the entire pressure. But so far she was water-tight, as we found on trying the pumps. Shortly before one o'clock the deck seams amidship gave way. Then came an interval of quiet during which we took our midday meal on deck. Between decks it was very uncomfortable. Before long some massive blocks of ice forced themselves under the ship's bow, and, though crushed by it, raised her up, slowly at first, and then more quickly, until it was fully seventeen feet out of its former position upon the ice. We sought to ease this movement as much as possible by shovelling away the ice and snow from the larboard side. A strange and awful, yet splendid spectacle, of which all the crew were witnesses from the ice, was this upward movement of the ship. With all due speed, the clothing and nautical instruments, journals and cards, were landed on the ice. Unfortunately the stern part of the ship would not rise, and the conviction was, therefore, forced

upon us that the schooner must soon be rent in twain.,

"About five o'clock the pressure temporarily ceased, and the raised ice retreated; so that, in the course of an hour, the ship, lying on her starboard side, glided into open water. The hawsers, which had been cast loose so as not to check her movements, were again made fast, after which we went to the pumps and found seventeen inches of water in the hold. All hands set to work, and about seven o'clock the ship seemed nearly clear, and we ventured to enjoy our evening meal.

"Alas! in a quarter of an hour's time the water had increased to two feet, and, in spite of all our efforts, continued steadily to increase. The position of the leak could not be ascertained by the most careful search; no sound of water could anywhere be heard; and the conclusion was that some part of the ship's bottom, under the coal, had been stove in. The fate of the *Hansa*, at all events, was sealed; the good ship was sinking! Our emotion was great, but we endeavored to face the melancholy fact with calmness. The house of coal on the drifting ice waste was destined to be, throughout the long and dreary Arctic winter, our sole asylum and, perhaps, our grave! In such reflections, however, we had no time to indulge. Our work was steadily prosecuted. By nine in the evening the snow had ceased to fall; a clear starry heaven shone above us, and over the dreary ice-desert spread the calm lustre of a cloudless moon. Ever and anon the firmament glowed, and the scenery was lighted up by the ever-changing glories of the aurora.

"It was now freezing sharply, with the thermometer at thirteen degrees below zero. One-half of the men were kept at the pumps; the others, until midnight, were occupied in removing from the doomed vessel the most necessary articles. 'As to sleep,' says Dr. Buchholz, 'it was not to be thought of, for the idea of our terrible position whirled through my brain in the wildest manner. What would become of us when winter really set in, if its approach were heralded by such bitter cold? In vain I attempted to think of any means of safety. It was useless to dream of reaching land. It might, indeed, be possible to force our way through great dangers, and across the fields and floes, to the inhospitable coast; but, at the utmost, we could provide ourselves with only a few days' food. Esquimaux settlements, from Scoresby's experience, were not to be expected, so that death by hunger seemed not very far distant from us. We could do nothing, then, but endeavor to save ourselves in the coal hut on the southward drifting



ice-field ; and, if it held together, we might hope to reach a South Greenland Esquimaux settlement in the spring or (which was somewhat improbable) get across the icy belt to Iceland.' One serious mishap attending the pumps was that the water poured out upon the deck could not run off through the scuppers because they were filled with ice ; therefore, it froze between the provision chests. The whole after-deck was soon blocked up with ice ; the water pumped up stood around the pumps, and the men who worked them stood in tubs to keep themselves dry. We made holes in the bulwarks to let it escape, but not with much advantage as, from the intense cold, the water came out in a semi-congealed condition. At the same time the ice settled so over the cabin skylight that the water oozed through its chinks. During the night our weary and exhausted men gained a few hours of refreshing sleep ; then they all drained gladly a cup of coffee, and once more set to work. The catastrophe, however, was close at hand. At eight in the morning, the men who were busy in the forepeak getting out the wood came, with dismayed countenances, to announce that it was already floating below. Captain Hegemann, when convinced of the truth of this statement, ordered the pumps to be unshipped and the vessel, which was visibly sinking, to be abandoned.

"All hands were at once engaged to transport to the ice the various articles of utility collected on the deck—bedding, clothing, provisions, and fuel. In silence were all the heavy chests and barrels lifted over the hatchway. First the cook's heavy iron galley, then two stoves were happily saved ; these insured us a supply of warm nourishment, an endurable (if not a genial) temperature in our coal-hut, and some other advantages during our winter captivity. For fear of falling short of fuel, we laid our hands upon every loose piece of wood. Meantime the vessel was rapidly settling down ; but we succeeded, nevertheless, in saving some objects which were incalculably precious in our situation ; a small medicine-chest, our lamps, books, cigars, boxes of games, and the like. But our work was far from ended. There, on the ice, everything lay in a heterogeneous heap. It was a complete chaos, in the midst of which some shivering rats struggled for life. For greater security we removed the whole baggage thirty yards farther across a crevasse. We had also to deal promptly with one of the seamen, Max Schmidt, who was ill with fever ; we wrapped him up in furs, and carried him on a plank to the coal-hut.

"At nine in the evening we were all gathered

together in our new asylum, which, feebly lighted by a lamp, resembled a capacious vault. Satisfied with the labors of the day, though anxious about the future, we prepared our beds. Planks were laid upon the ground, and covered with sail-cloth ; then each of us wrapped himself in his furs, and took his rest. One man remained on guard to keep watch over the stove, which constantly raised the temperature of our chamber from 2° to 27 ½° F. Our couch was exceedingly hard and decidedly cold ; but we were so exhausted and weary that we quickly fell asleep.

"In the morning we hastened to the ship to see what more could be saved. But the coal-hole was already under water. We cut down the masts, and, with their rigging, dragged them over the ice ; a task which occupied us the whole day. The mizzen fell at eleven o'clock ; at three, it was the turn of the main-mast ; and the *Hansa* presented the appearance of a miserable wreck.

"For the last time the captain and steersman went on deck, and about six o'clock loosed the cables, which, by means of the anchor, still moored the ship to our ice-floe, for there was reason to fear lest the latter, which bore nearly all the treasure we had saved with so much difficulty might break up when the ship sank.

"The poor battered carcass of the *Hansa* disappeared in the night of the 21st, in Lat. 70° 52' N. and Long. 21° W., about a German mile and a half from the Liverpool coast. We could distinctly trace its cliffs and mountains, which, according to Dr. Laube, closely resembled the chalk-hills of Munich ; we could distinguish Glasgow Island and Holloway Bay ; but there was no means of opening a road across the labyrinth of floating ice. The largest of our three boats was lying loose on the deck of the *Hansa*, when she went down, and accordingly floated. The weather being very favorable we were able to haul up on the ice, near the hut, this third hope of safety.

"The following days were occupied in making ourselves as comfortable as possible in our black-looking hut. Owing to the comparatively high temperature in its interior, the sail-cloth roof permitted the water to trickle through the snow which covered it, so that we passed a very bad night. We remedied this inconvenience by substituting a roof of planks, covered with sails. To provide for light and ventilation, we inserted a couple of windows in the roof ; but, in spite of this provision, were unable to dispense with the lamp the greater part of the day. Along the entire length of both sides of the room, we raised a tier of boards about six inches above the ground, and laid our mattresses upon it. To prevent the pillows from



freezing to the wall, we lined it, where necessary, with double planking. The cooking stove was placed behind; the smaller one in front. Along the walls, which were hung with sail-cloth, shelves were placed, and on these we disposed our books, instruments, and cooking utensils. The ship's chests, planted in front of the bed-floor, served for table and seats. The gilded looking-glass from our old cabin adorned and brightened the interior of our new one; underneath it hung a splendid barometer; and the ticking of the clock cheered us with its accustomed sound. By all these little arrangements, our residence in the coal-hut was rendered comparatively endurable. A good night's sleep recruited our weary frames; and, thanks to our capital preserved meats, we gained fresh strength from the marvellous soups and stews prepared by our cook.

"We were no longer threatened by any imminent danger, so our melancholy gave way a little, and it was even with jests and laughter that we recalled some of the humorous scenes of the 19th. In the evening we resumed our whist club, playing on a volume of the ship's journal, as we had no table. The greater portion of our supplies of fuel and provisions, as well as the boats, lay still upon the ice in the neighborhood of the scene of disaster. The work of transporting it was accomplished chiefly by means of the sledges, and occupied several days. For the time we piled it all up beside the house. As the layer of snow outside rose as high as the walls, we dug around the hut a trench four feet wide, which we covered with an awning of sail-cloth, increasing the protection it afforded by a roof of snow. This kind of corridor furnished a convenient place for stowing away our provisions, and there we deposited the greater portion. The remainder, which would serve for about two months, was carefully deposited in the boats. The small quantity of fuel procured by cutting up the masts and yards we threw together in a heap. Sometimes the boats were stationed in one place, sometimes in another; we extricated them at intervals from the snow, and transported them to some more sheltered locality.

"We put up the ship's hatchway before the door of the hut, to catch the wind. A man-rope helped us to descend into our 'fox's hole,' the roof of which scarcely rose above the level of the snow.

"We had saved the large flag, and on a snow-hill at the rear of the house we raised the top-gallant mast as a flagstaff. In fine weather we hoisted the flag, partly for our amusement and partly in the for-

lorn hope of attracting the attention of any Esquimaux settlement on the coast.

"At last we succeeded in introducing order into our chaos. The confused heap of individual belongings was portioned out among its various owners. The warming arrangement was excellent, for though the temperature of the external atmosphere had sunk to 13° F., the thermometer inside the hut marked 70° 30'. Often the fuel necessary for preparing our meals proved sufficient also for heating purposes; and, in order to spare the wood, we seldom used the second stove. The damp was remarkably diminished, for it escaped easily through the dormer-window, which also admitted a supply of fresh air.

"Slowly but uninterruptedly our ice-field drifted southward. We skirted the Liverpool coast as far Scoresby Sound, sometimes approaching, sometimes receding from the ice with a uniformity of movement which was probably due to flux and reflux in that large deep sound. We could perfectly distinguish the outline of the coast bristling with rocks, and in two valleys, lying between abrupt precipitous mountains. We fancied we saw huge glaciers covered with snow.

"We often contemplated with melancholy feelings the spot where the *Hansa* went down. Now there was space enough for her between the ice-fields and the land-ice.

"At the end of October the sun rose at half-past nine, and about three o'clock sank behind the rocky coast. In the hut we had but a few hours of daylight for reading and writing.

"We endeavored, by every possible means, to maintain a constant activity. We skated; we made snow images. The order of the day's proceedings was always observed to the letter.

"The last night-watch woke us at seven. We rose, dressed ourselves in our woollen clothing, washed in melted snow, and took our morning's coffee with a ration of hard bread. Then we betook ourselves to our various avocations. Some acted as cabinet-makers and carpenters; some plied the useful needle, some chopped wood; others kept the daily registers. If the weather were clear we took our astronomical observations and recorded all useful and necessary calculations. At one o'clock, dinner. Strong meat soup was the *piece de resistance* at this meal; and as we had an abundance of preserved vegetables, our cook had every opportunity of displaying his fertility of resource. We were careful to eat but little of salt meat or bacon. Nor did we venture to indulge in alcoholic liquors—confining ourselves to one drink of



good port-wine on Sundays. Throughout the winter, owing to these precautions, our health was good. We had no case of sickness or of physical discomfort, except the sailor Schmidt's attack of fever when the ship went down; and a frost-bitten toe of the sailor Büttner. We were always on the alert, and dissension was prevented by the maintenance of a strict discipline.

"By degrees we completed a thorough exploration of our floe. We made short tours, and cut roads in every direction. We ascertained that it measured about seven nautical miles in circumference while its average diameter was two miles. The landscape surrounding us was dreary from its monotony. It presented a uniform plain, or field covered with frozen, glittering snow.

"The term 'field' we may here explain signifies a vast and continuous floating mass of ice. Smaller pieces are called 'floes' and still smaller ones 'drifts.' Now the ice-raft, on which, as Dr. Laube happily remarked, 'we were as the Lord's passengers,' was a solid field, fully forty-five feet thick—five feet above and forty feet below the water level—composed of drifts and floes frozen into a hard, compact mass.

"By the beginning of January, the accumulated snow, often eight feet in height, had filled up every fissure and crevasse in the dreary, far-spreading plain; so that the eye wandered dissatisfied, without finding a solitary resting point, over the wearisomely blank waste of whiteness! When at any distance from the hut, it lay so deeply embedded in the snow that we could distinguish nothing but the dark spot or line of the chimney, the boats, and the flagstaff, with its fluttering banner—a sign of civilization, which was duly unfurled after every passing whirlwind. Later in the spring, when the process of liquefaction and disruption had greatly reduced the size of our raft, it appeared, owing to the heaped-up blocks of ice and snow-wall, almost like 'animated blocks of ice.' On examining them more closely, these 'ramparts' were found to be the pushed-up walls of small ice-masses to which our field had been knitted by the frost. At intervals rose mounds of snow, which the change from thawing weather to frost had almost converted into glaciers, into a solid and homogeneous whole.

"The western and northwestern borders of our field were dreary in the extreme. The collision and almost constant friction of the driving ice floes had raised up walls ten feet in height, embellished with snow crystals, which radiated in the sun like innumer-

able diamonds. In the auroral displays at morn and eve, the white flakes turned to pale green. A beautiful radiance pervaded the night, for moonlight poured fully and freely from the unclouded heavens; and so strong and keen was the reflection from the snow-mirror, that it was very easy to read the minutest handwriting, and to discern remote objects.

"Nights such as these, moreover, were always illuminated by the glories of the aurora borealis. For example, on the 5th of December it shone with a splendor so intense as to pale the starlight, and shadows streamed across our monotonous ice-field. The coast, according to its varying distance, was distinguishable as a dark, vague streak, or in all the details of its rocky configuration."

Amid the solitary scene of sea and ice Christmas and New Year's Day was kept devoutly, but on January 11th a terrible storm made them fear that their end had come. For five days they slept in the boats, while they rebuilt the huts on shore, and then for dreary week after week the ice-raft drifted onward. Easter Day, April 17th, was celebrated in Nukarlik Bay, and May 7th, open water in the direction of land was seen, and Captain Hegemann resolved to take to his boats. He distributed his company among the three boats, and hoisted sail about 4 o'clock P. M. with loud cheers and hurrahs. We again quote the German narrative:

"We kept under sail till nine o'clock moving slowly at first, but more quickly when we got the boats into trim, so that when we made fast to a floe for the night we were nearer the shore by seven miles.

"We underwent considerable trial in climbing upon the floe. After having found a convenient place, the boats were unloaded, and hauled up one by one.

"The provisions and fuel of each boat were piled beside it, and covered with oiled sail-cloth; then, by way of a roof, we covered the larger of the two small boats with the sails of the other, and thus provided an imperfect defence in case of bad weather.

"These arrangements occupied us for some hours. We supped upon bread and coffee, which the men prepared in the boats with the spirit of wine lamp.

"It was half an hour past midnight when we wrapped ourselves in our furs and laid down to rest. Our sleep was not very long; at half-past five we resumed our voyage.

"Steering towards the west, we arrived within four miles of the shore. But about noon the ice became so compact that we were again compelled to make fast to a floe.

"Until five in the afternoon we remained ensconced



in our boats, on this mass of ice which was slowly drifting southwards. The sun cheered us with its rays; but it had the inconvenience of producing that peculiar effect on the sight which is due to long gazing on the snow. The eyes of the lookout men, incessantly turned to windward to make out some navigable channel, could no longer bear the dazzling splendor of the sunshine-flooded plains of ice. At first they were sensible of a painful weariness; then an inflammation of the eyes came on, which caused an agonizing pain; they shed tears abundantly; their minds wandered. All they could do, however, was to endure patiently while protecting themselves from the action of the light with a thick bandage. The attack did not last above a day and a half or two days, but it was necessary to guard against its return. The disease, moreover, has many stages. Some of us suffered severely and suffered often; others escaped with only a slight feeling of fatigued vision. Later on, we attempted to preserve our eyes by constructing spectacles out of the green-colored lenses of the instruments of refraction, and by means of this ingenious device, each person was provided with what is an indispensable article in the equipment of an Arctic voyager.

"Pressing forward under canvas, we made our way through the thick floating ice until within about a mile and a half of the promised land. Then our course was suddenly checked by the solid heaped-up masses before us, which formed an apparently insurmountable barrier. The painful work of hauling the boats had exhausted our strength, and after a ration of bread, with a little coffee, we fell exhausted into a deep lethargic slumber. Bad weather, snow, and tempests detained us for six days upon the ice-floe. The temperature varied from  $36\frac{1}{2}^{\circ}$  F. by day to  $21^{\circ}$  F. by night. On the 10th of May, in the afternoon, we enjoyed our customary game of whist in the whale-boat.

"The sail of the large boat, which served as a roof during the night, did not protect us very sufficiently from the damp, on account of its comparative tenuity and its transparency; and the rain which soon came on, and fell uninterruptedly for twenty-four hours, sprinkled us as abundantly as if we had been exposed to a shower-bath. The two other boats were better off in this respect, for they had capital coverings of oiled canvas.

"On the 14th the bad weather cleared off and, the ice giving way toward the south, we dipped our oars and accomplished a slight trajet; but the ice closing in again, we found ourselves condemned to another captivity on the floe. It lasted five days.

"On the 19th May the storm ceased, and on the 21st, in the afternoon, the weather cleared. The captain and Mr. Hildebrandt then undertook an excursion towards the land. They found the ice ill adapted to their project, many floes being intersected by wide crevasses, the ice being piled up in enormous blocks, and few of the fields exceeding one hundred paces in length. It appeared to us impossible to haul the boats through such a labyrinth; and we resolved to await the effect of the spring-tides, which would flow in a few days.

"The time seemed to us dreadfully long. Some of the men amused themselves with carving, and we ourselves undertook to fashion the pieces for a game of chess. Bade made a king, in full regal attire and crowned. Others undertook more useful tasks and wove some lines eighty fathoms long, in the hope of catching a few fish to vary our scanty bill of fare.

"The weather on the 24th of May was splendid. The sun shone in a cloudless sky, and the thermometer, when exposed to its rays, marked  $25^{\circ}$  F. We gladly availed ourselves of such an opportunity of thoroughly drying our clothes and linen, which had long been in a wretchedly damp condition. The boats were uncovered, and smoked bravely in the hot sunlight. Everybody was on the alert. Mr. Bade, accompanied by some of the men, went hunting for a dinner. An unsuccessful hunt! The seals would not show, the fish would not bite, and the silly divers were wise enough to keep out of the range of shot. Mr. Hildebrandt, with the sailors Philip and Paul, succeeded, however, in reaching the island of Illuidlek, which lay three miles distant, with an elevation of from 140 to 150 yards. They landed at one, and were back with us by four o'clock.

"This rocky island-desert measures about ten nautical miles in circumference. Our men landed on the northeast side, at a spot from which, in boats, it would be easy to reach the south coast, where we might expect to be sheltered from the wind and the ice-drift. There was also a chance of adding to our provision store by hunting sea-birds.

"Such was Mr. Hildebrandt's report, and it confirmed us in our resolve to make for the island. As the heat of the sun was fatiguing, and the glare of the snow blinding, we agreed to travel by night and rest by day; and we calculated that the journey might be accomplished in eight days.

"On the first night we succeeded in advancing five hundred and thirty paces. Then we enjoyed the day's rest, and at seven in the evening resumed our painful toil. That night we made seven hundred



paces. The 27th was Konrad's birthday; and to keep up the spirits of the men, we served out to each a glass of sherry. The work increased in difficulty as we advanced. First the boats had to be emptied and dragged to the spot where we purposed to rest for the day. Then we had to return across the broken ice to fetch our stores; and loaded with these, to regain the boats. As each person's burden was one hundred to one hundred and five pounds, the labor we underwent is more easily imagined than described. But it is useless to dwell on details; suffice it to say that on the 4th of June we succeeded in landing in Illuidlek, and we felt we had cause for gratitude to an all-merciful Providence.

This small island stretches off southeast to northwest. On the northwest a steep, dome-shaped eminence, and in the southeast a sloping mountain, are surrounded by clusters of barren and rugged cliffs. From a small island, Ivimuit, lying in front of it, and from Cape Discord on the mainland, it is separated by a small channel. On the side which faces the mainland extends the formidable barrier of a long chain of rocks, beyond which lies a low island; probably that which, in Graah's map, is named Omenarsuk. These rocks are of the most fantastic outline, and entirely devoid of vegetation. A couple of solitary gulls, perched in a crevice of the rock, regarded our arrival with curious eyes; while a legion of guillemots screamed and fluttered in the open waters of the pass.

"We were between the southeast shore of the island, Cape Discord and the little island of Ivimuit. Towards ten o'clock we entered a bay sheltered by high cliffs from the north; we christened it Hansa Haven (or Hansa Harbor). There we designed to pass the night, and with this view, had already carried ashore our stores; but the tide falling, our boats grounded, and therefore about midnight, we left the bay and made fast to a piece of ice lying close in shore. It was now exactly four weeks since we had left the floe in the hope of gaining the mainland in a few days.

"On Whitsunday the weather was beautiful, and Bade took the small boat and went hunting. The spoils he brought back were scanty; consisting only of twenty-two divers, the flesh of which, however, prepared as a stew, furnished us with a couple of capital dinners. Our provisions were now reduced to a fortnight's supply.

"The hunters had wandered into the higher grounds, and had discovered along the coast, in a southerly direction, a narrow strip of water. They found themselves in the midst of bare rocks, the more sterile as

they were more elevated, and bearing only a few mosses and some creeping willows. No trace of man was discernible. Illuidlek, where Graah had found a small native population, seemed to have been long uninhabited.

"On Whit-Monday, the 6th of June, we resumed our enterprise. Our destination was Friedrichsthal the nearest settlement on the southwest coast of Greenland. However, we hoped to encounter, long before reaching that far-off point, some fishing party of Esquimaux in search of seals. We painfully followed up the Kangerdleck fiord, sometimes pushing and sometimes swimming; then with oars and sail we made head against a violent southwest wind from six o'clock when the ice had become more broken up until eleven at night.

"Omenarsuk Island rises scarcely one hundred and thirty feet above the sea, and yet on the north side is found a spot, only a few square yards, covered with fresh-water ice, which has all the appearance of a diminutive glacier. From its situation it cannot be an isolated block of ice detached from the heights, but rather a patch of fresh water ice, caused by the melting of the snows, which would be frozen in the ravines of the island. This formation of land-ice is so small a quantity, in the very neighborhood of those mighty ice-currents, appeared to us an interesting phenomenon.

"A mile from the headland of this strait, which we named Cape Pentecost, we hauled up our boats on the firm and even ice-coast.

"On the 7th of June, the weather was all that could be desired. We proceeded very pleasantly under sail, enjoying the rays of the sun, along a precipitous coast, and doubled Cape Pentecost, which raises aloft into the air its rocky crest. Gloomy and wild was the aspect of the shore. The dark-colored rocks were relieved by narrow streaks of snow which descended them about half-way down; and sometimes also we remarked the green tint of a few wretched mosses creeping over the hard surface. At noon we encamped on a small island—Kutch of Graah's map. In the hollow of its rocks we found some fresh limpid water, excellent for culinary purposes, and of which we drank heartily a delicious draught. The rocky shores of Kutch must have been frequently in collision with the ice-masses descending from the north, and, indeed, in many places they had been plainly worn down and levelled. On these rocks, which were covered at high water, we saw the shining fragments of floes which had been driven against them and shattered in pieces.



"In the evening we hauled up our boats for the first time on the rocks of the Greenland Continent, about five miles to the north of Cape Valloë. And, as there we were safe from all contact with the ice, we gave ourselves up to complete repose. At day-break, the light of a glowing sun revealed the scanty vegetation of the soil. There were sorrel, dandelion, and conqufoil, which we sought for eagerly in the hollows and crevices of the rocky ground. With the help of a little pickle, we improvised a salad, to eat with the remains of our divers.

"Again we set sail, and by the evening had traversed twenty miles. This time our encampment was made on the south point of Greenland (Lat.  $60^{\circ} 34' N.$ ) in front of the fiord of Lindenow.

"On the following day we doubled Cape Hridt-feldt, which rises in the form of a majestic pyramid to the height of several thousand feet. Before it lay a group of rocks, at one of which we checked our course, in order to find the best channel.

"The color of the mountains from this point contrasted absolutely with those we had hitherto seen. They looked like melted copper. The intensely blue atmosphere in which they raise their magnificent forms, enhances the richness of the hues of this picturesque coast.

"The rocks lying almost immediately under the cape are wasted, perfectly round, and may be compared to gigantic ramparts, polished and smooth on every side. The sea and the ice have done their work. These dome-shaped rocks and rocky cupolas continued

visible along the whole line of coast; thousands in number, forming a complete bulwark of stone, and serving to defend the land against the encroachment of the ice.

"But as we continued our voyage we were greeted by shores of a brighter aspect. To the north of the promontory of Igalalik we perceived at a great distance, some 'spots of greenery' covered with a short, crisp herbage."

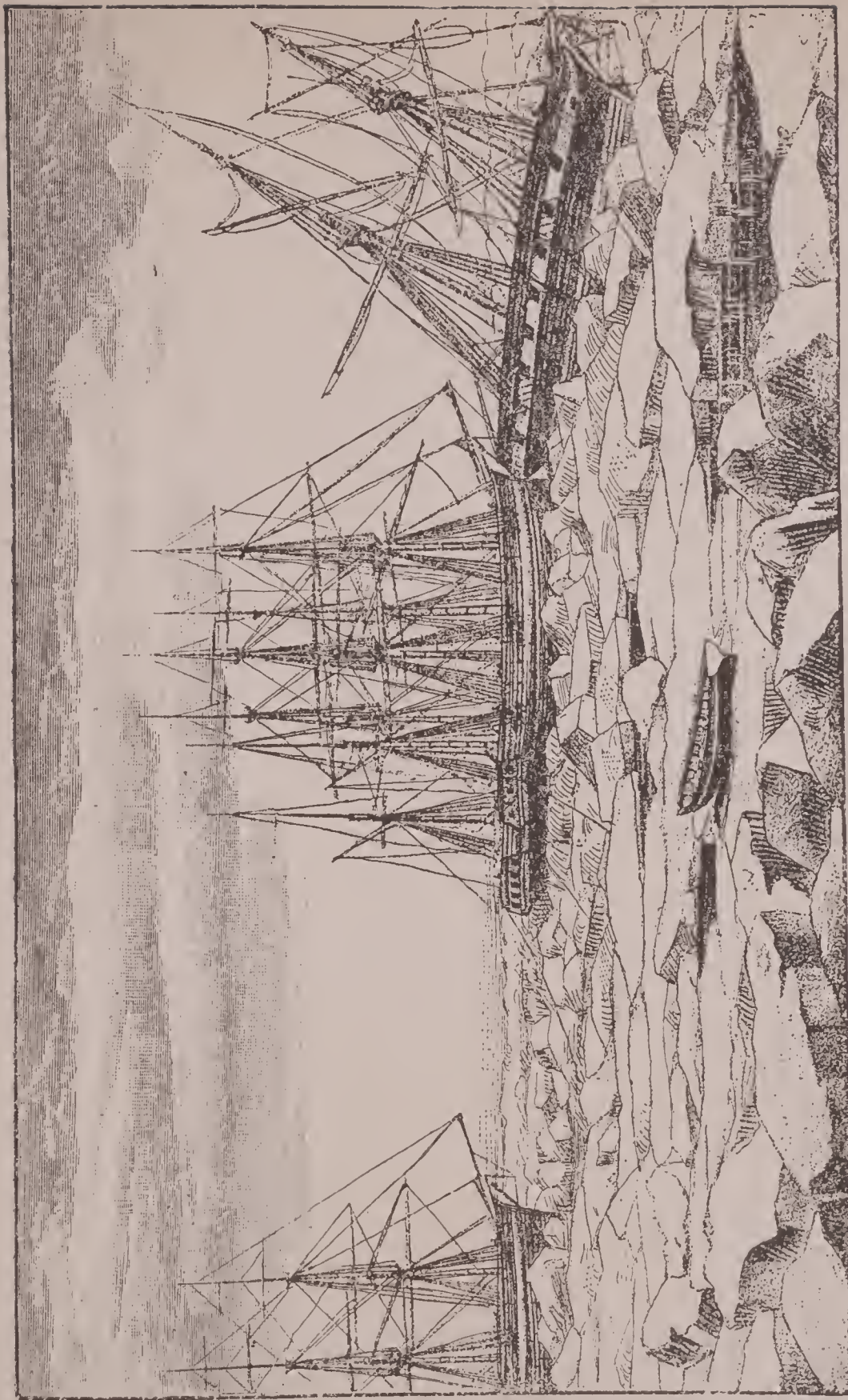
They were now not far from Friedrichsthal, the seat of a Moravian mission, and they arrived at that Danish settlement on July 13th, 1870. They touched at Copenhagen September 1st, and finally reached Schleswig September 3d.

The adventures of the sister ship *Germania*, after the separation of the two vessels, need not be recounted. It is the usual record of Arctic life, of a dreary winter, and of the return of the sun. In March, 1870, a sledging party was sent out, which, on the 15th, crossed the 77th degree of latitude. The observations made by Lieut. Pager led him to disbelieve in the existence of an open Arctic sea. They had obtained the most northern point ever reached in East Greenland, and saw proof that the most recent geological formations occur in the remote north; they had discovered Kaiser Josef Fjord with its immense glaciers and behind it the towering peak of Mount Petermann. Then they turned their prow homeward, and landed at Bremerhaven, September 11th, 1870, convinced that it was impossible to reach the North Pole from the basis of East Greenland.



AMATEUR DOG-DRIVERS.



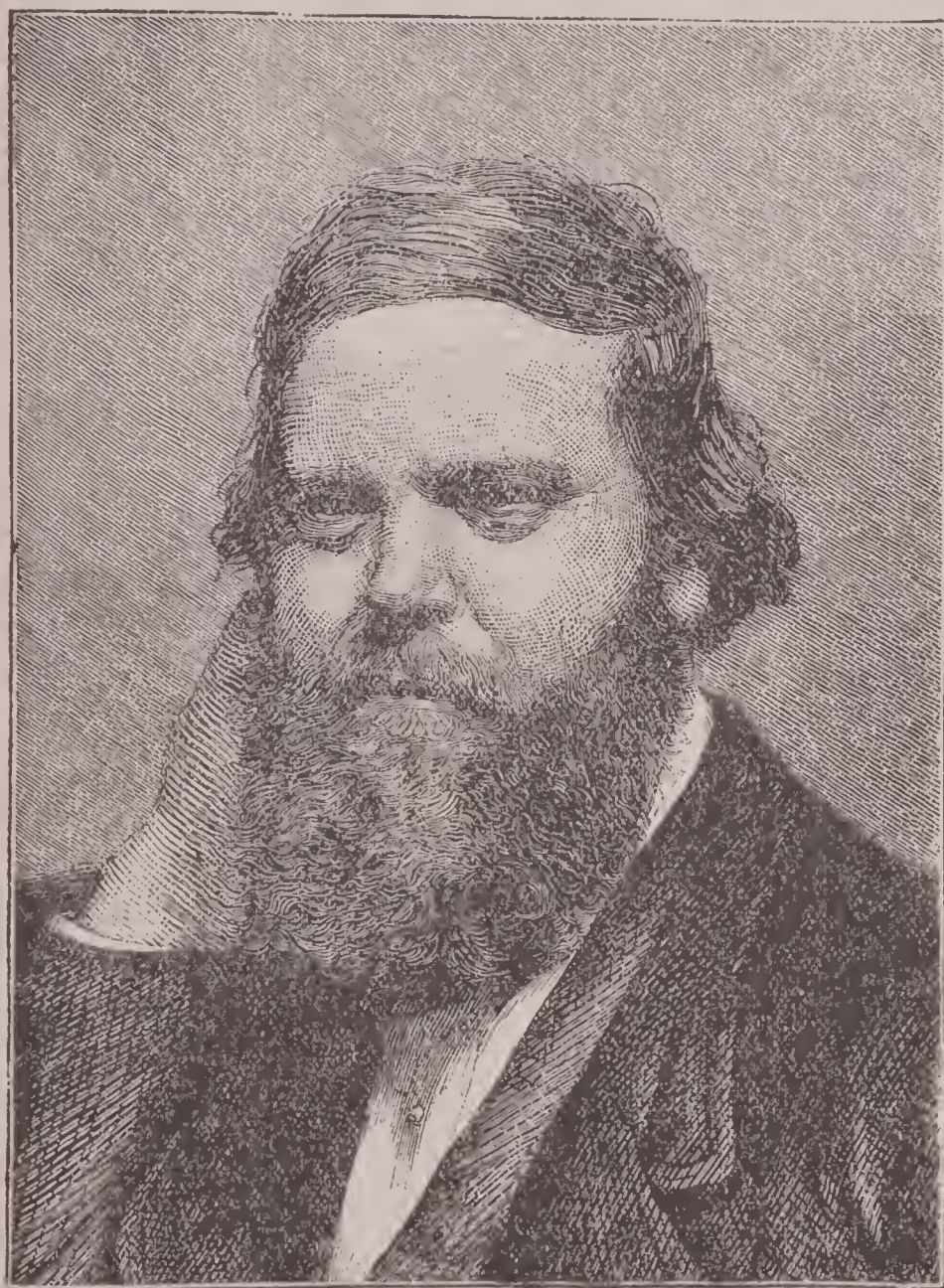


WRECK OF THE AMERICAN WHALER "MCLELLAN," ON THE BOWS OF THE ENGLISH "NORTH STAR," IN MELVILLE BAY



## CHAPTER IX.

## THE "POLARIS" EXPEDITION.



CHARLES FRANCIS HALL.

ONE of the most indefatigable of recent Arctic explorers was the American navigator, Charles Francis Hall; and a brief sketch of his career, before he undertook the command of the *Polaris*, and pro-

ceeded on the expedition in which he lost his life, can hardly fail to interest the reader.

It was in 1860 that he first visited the Polar Regions; though from boyhood they had been the subject of his dreams and the goal of his desires. On this occasion by means of dog-sledges and an "old, rotten, leaky, and ice-beaten boat," which he obtained from a whaler, he made a careful and complete examination of the shores of Forbisher Bay and Countess of Warwick Land; discovering numerous memorials of the visit of Martin Forbisher and proving that the inlet named by that old seaman a strait, and designated as such on the maps for two hundred and eighty-four years, was really a bay. He brought back with him to the United States two of the Esquimaux, Edierbing and Tookoolito—who figure in the *Polaris* expedition as Joe and Hannah. These had previously visited England—in 1853—and had acquired many of the habits of civilization. The woman could read a little, and spoke English well enough to act as interpreter. Joe was a good pilot, and could also speak some English.

His explorations among the Esquimaux—or Innuits, as they prefer to call themselves—convinced

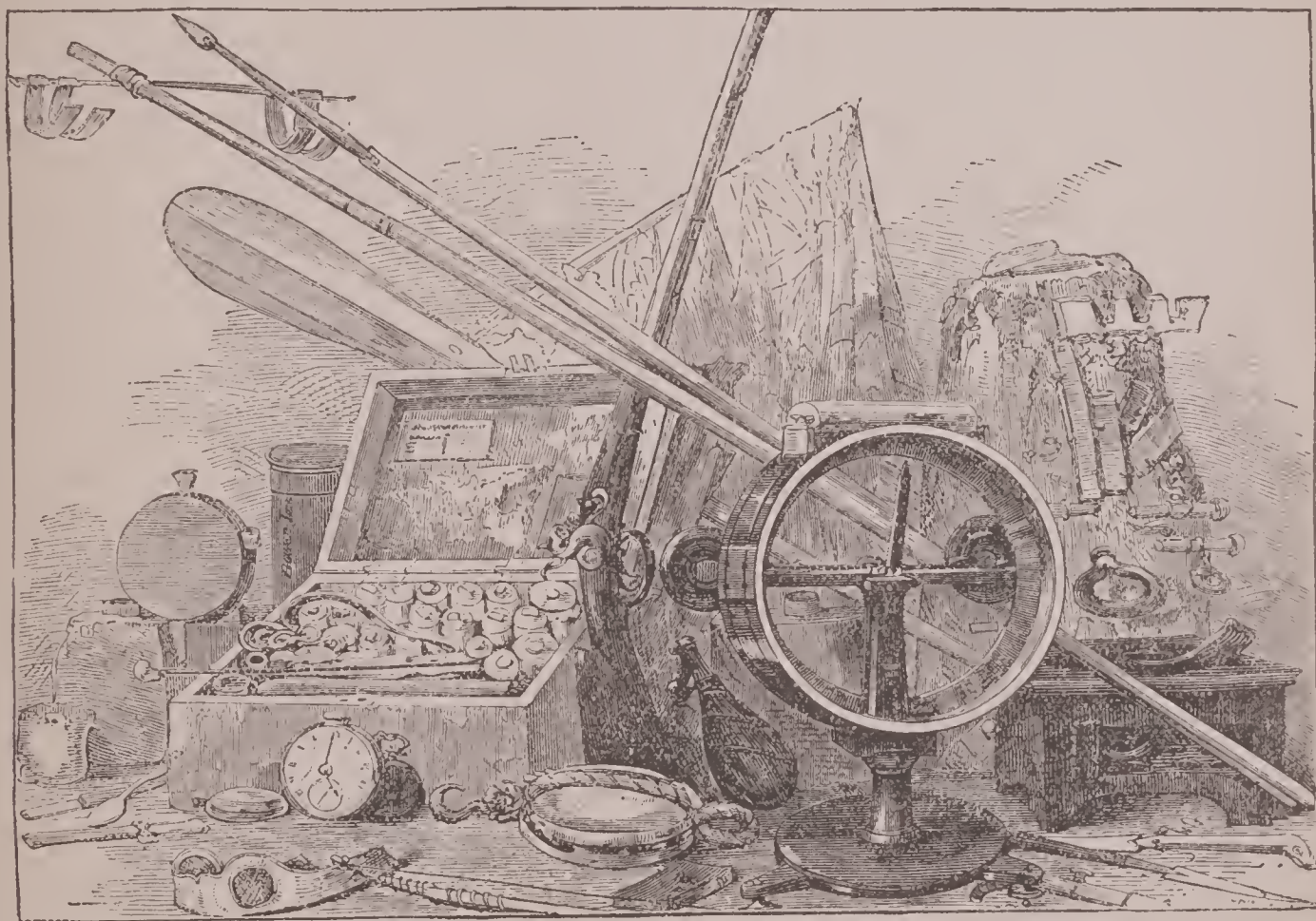
him that they knew the secret of Sir John Franklin's fate; and that it was only to be learned by living among them long enough to acquire their confidence.



All his energies were therefore addressed to the task of raising the funds for a suitable expedition; and he was so far successful that, in the summer of 1864, he was enabled to take his passage for Repulse Bay, along with Joe and Hannah, on board the bark *Monticello*. They were landed on Depot Island August 21st. Thenceforward he pursued his investigations among the Innuits with indefatigable energy, and ascertained from evidence furnished by the natives that one of Franklin's vessels had actually accomplished the North West Passage while five of

their lives, they gladly saw them perish and plundered them of every article on which they could lay their hands. Captain Hall, however, seems to us to place too implicit a reliance on the statements of the natives; and we see no grounds for believing that some of Franklin's men had been reduced to acts of cannibalism. He collected some hundred and fifty relics of the expedition, in the shape of articles which had belonged either to the ships or their officers.

At various times, during his long absence from the United States, he sent home notes of his progress and



RELICS OF THE "FRANKLIN EXPEDITION" (DISCOVERED BY M'CLINTOCK. 1858-1859).

her crew were still on board; further, that when, abandoned by the crew, she was found by the Esquimaux, in the spring of 1849, near O'Reilly Island, lat.  $68^{\circ} 30' N.$  and long.  $99^{\circ} 8' W.$  imprisoned in the ice.

Captain Hall, in his published narrative, informs us that the bones of Franklin's gallant but unfortunate followers were scattered over the snowy wastes of King William Land. The Esquimaux of that region are a more churlish and savage race than those of Repulse Bay; and instead of rendering the lost explorers the little assistance that would certainly have saved

experiences through the captains of the whaling vessels he fell in with. In 1865 he had learned that Captain Crozier, of the *Terror*, with Parry, Lyon, and one other whose name he could not obtain, had survived their companions, who yielded without any very protracted struggle to the effects of cold and starvation. One Inuit had taken pity on a wanderer, and sheltered and fed him until he died. It would appear that Crozier and a companion were living so late as the autumn of 1864. The natives affirmed that the white men had fought with an Indian tribe near the



estuary of the Great Fish River, and that many of the latter were slain; that, afterwards, Captain Crozier and two companions had started in a southwesterly direction for Fort Churchill, or York Factory, and that at that time they were supplied with food and with either skin or India-rubber boats.

In 1866 Captain Hall wintered on Repulse Bay, and in the course of the winter accomplished a six weeks' journey with dog-sledges to the northwest, in order to purchase dogs for the work of the next season. On this journey he was accompanied by five white men, volunteers from whalers lying on Repulse Bay, his Esquimaux followers, Joe and Hannah, and about thirty dogs. They met with some rough experiences, and endured very considerable hardships; but succeeded in purchasing no fewer than forty dogs. Hall was told by the natives that some of the white men had been among them and that one had died and was carefully buried.

On his return to Repulse Bay, the indefatigable explorer declared his conviction that some of Franklin's party were still alive, and offered five hundred dollars in gold to each white man who would accompany him in a further search during the season 1867-68. Five seamen from the whaling ships again volunteered; and after employing a couple of months in the chase, so as to lay in a sufficient stock of provisions the little company started on a journey which finally convinced even Hall himself that his sanguine anticipations were groundless. Abandoning, therefore, all hope of rescuing the unfortunate men, who had undoubtedly perished two or three years before, he returned to the United States, his sanguine mind intent on a new object—the discovery of the North Pole.

Hall was well adapted for his self-imposed work. He was a well-proportioned, powerfully built man, muscular rather than stout, and measuring about five feet eight inches in height. His powers of observation were considerable, as is shown in his descriptions of Esquimaux life and manners; he was energetic, persevering, courageous; but he was unable to command men, and the failure of the Polar expedition, which we are about to relate, was undoubtedly due to his want of firmness and decision as a leader. Moreover, in his all-absorbing desire to carry out his project, he was apt to lose sight of the difficulties that lay in the way of their realization, to conceal them from himself and others.

These qualities, however, stood him in good stead while he was engaged in securing the support of the Government and the people of the United

States for his contemplated expedition. None but a man of buoyant temperament could have endured the labor which its preparation entailed upon him. He succeeded, however, in enlisting the public sympathy on his side, and Congress then voted a grant of fifty thousand dollars to defray his expenses.

So in due time the *Polaris* was fitted out, officers and men were engaged—though, unfortunately, without sufficient inquiry or discrimination, and Hall, after the American manner, was presented with a flag which De Haven, and Dr. Kane, and Dr. Hayes, had successfully carried nearer and nearer to the coveted terminus of discovery. Hall, in accepting it, declared his belief that this flag, in the spring of 1872, “would float over a New World in which the North Pole Star is the crowning jewel,” and the *Polaris* sailed from New London at 4 P. M., on the 3d of July. Her commander was accompanied by Dr. Emil Bessel, as chief of the scientific corps; by Mr. Meyers, as meteorologist; R. W. D. Bryan, astronomer and chaplain; Sidney O. Buddington, sailingmaster; Emil Shuman, chief engineer; Hubbard C. Chester, first mate, and William Morton, second mate. The last named, as the reader will remember, figures prominently in the record of Dr. Kane's expedition. It was he who crossed the great Humboldt Glacier, and, looking forth upon a channel, afterwards visited by the *Polaris*, made the mistake of supposing that he had discovered the open Polar Sea.

Touching at Holsteinberg, one of the Greenland settlements, Hall fell in with a Swedish exploring expedition under Captain Van Otter, which had got no farther than Upernavik, and was then homeward bound.

On the 4th of August the *Polaris* entered Godhaven where it took on board a supply of coats and other stores. While lying in this sheltered port, she was joined by Captain Tyson, a man of considerable Arctic experience, as Assistant Navigator.

Upernavik was reached on the 18th; and here the services of Hans, the well-known Esquimaux hunter, were secured.

Captain Hall appears to have had very decided premonitions of disaster, from the fact that he left here in charge of Inspector Smith, a quantity of valuable papers relating to his second expedition, and particularly to his search for Sir John Franklin; an extraordinary step to take under the circumstances, as his object in carrying them with him was to write them up for publication on his return. Why Captain Hall so carefully avoided allusion to the dissensions which had already taken place on board the *Polaris* can be



explained only by his sanguineness of temperament, which induced him to overlook all impediments and disagreeable incidents in the overmastering desire to push onward to the far North. There was nothing which he dreaded so much as the delay or abandonment of the expedition. To give up was an impossibility; but he could willingly die if his object was achieved, or in achieving it.

On the 21st of August the expedition left Upernavik, and on the 24th sailed from Tossar. Soon afterwards they entered Smith Sound, and through icebergs and ice-floes steamed past Port Foulke, the scene of Dr. Hayes's adventures.

On the 27th they reached the point where Kane, in 1855, abandoned the *Advance*. Still they steamed onward, and onward, sailing round obstructing ice, and making their way with so much rapidity, that, on the 28th they gained lat.  $81^{\circ} 35'$  N., and afterwards entered Kane's "open sea," which proved to be a land-locked bay, now named in the charts after the *Polaris*. It proved to be about forty-five miles wide, with high land on each side.

Still sailing on, they found themselves in a channel similar to Kennedy's, which was much obstructed by heavy ice. The prospect now began to grow gloomy, and some of the faint hearts on board would fain have been content with the discoveries already made. Hall and Tyson and Chester were anxious to go forward without delay, as the channel still lay open to the northeast; but having arrived in lat.  $82^{\circ} 16'$ , they so far compromised with Buddington and his party as to agree to lay up for the winter. On the 7th of September, therefore, the *Polaris* steamed in nearer the land; and, in lat.  $81^{\circ} 38'$  was successfully carried into a tolerably sheltered cove, about twelve miles long and nine miles wide, which Hall appropriately named "Thank God Harbor."

The coast hills here attained an elevation of from 900 to 1,300 feet; and the great scars and fissures in the rocks looked as if wind and weather, frost and ice, and sudden changes of temperature, had done their worst with them. At their base lay a great quantity of débris; stones and sand and rocky boulders, which had been disintegrated and broken up by the frost. To the South, a great glacier came down from the heights, and sweeping round in a wide circuit, fell into the bay northward of the *Polaris*. At various points traces of an Esquimaux settlement were discernible: the circles of stones showing where tents had been erected. There also were some spear heads made of walrus-teeth, some pieces of bone and other articles of Esquimaux handiwork.

While preparations for wintering were being made Captain Hall started on a sledge journey, which occupied from October 10th to October 24th. On his return he was suddenly taken sick. At first it was supposed to be only a temporary bilious attack, but on the following day the symptoms became alarming and he was frequently delirious. The illness continued and gradually assumed the appearance of paralysis.

Early on the 8th of November, the heroic explorer's adventurous career terminated. "Last evening," says Tyson, "the Captain himself thought he was better, and would soon be around again. But it seems he took worse in the night. Captain Buddington came and told me he "thought Captain Hall was dying." I got up immediately, and went to the cabin and looked at him. He was quite unconscious—knew nothing. He lay on his face, and was breathing very heavily; his face was hid in the pillow. It was about half-past three o'clock in the morning that he died. Assisted in preparing the grave, which is nearly half a mile from the ship, inland; but the ground was so frozen that it was necessarily very shallow—even with picks it was scarcely possible to break it up."

In Captain Tyson's diary we find another entry under the date of November 11th, which closes this strange, eventful history:

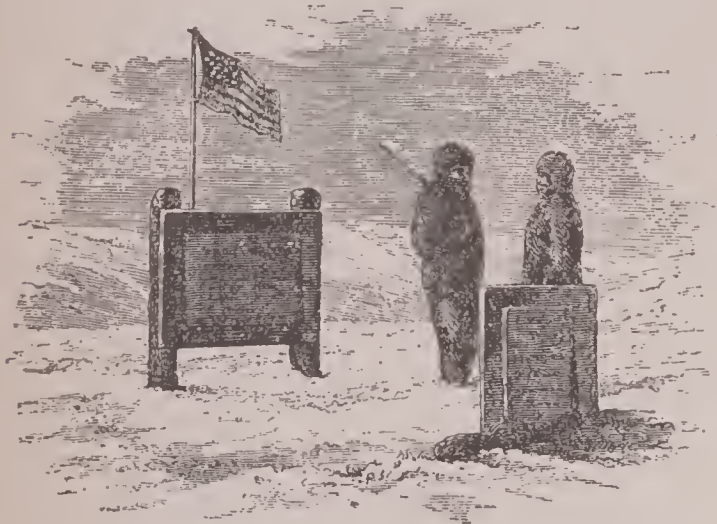
"At half-past eleven this morning we placed all that was mortal of our late commander in the frozen ground. Even at that hour of the day it was almost dark, so that I had to hold a lantern for Mr. Bryan to read the prayers. I believe all the ship's company were present, unless perhaps the steward and cook. It was a gloomy day, and well befitting the event. The place also is rugged and desolate in the extreme. Away off, as far as the dim light enables us to see, we are bound in by huge masses of slate rock, which stand like a barricade, guarding the barren land of the interior; between these rugged hills lies the snow-covered plain; behind us the frozen waters of Polaris Bay, the shore strewn with great ice-blocks. The little hut which they call an observatory bears aloft, upon a tall flag-staff, the only cheering object in sight; and that is sad enough to-day, for the Stars and Stripes droop at half-mast.

"As we went to the grave this morning, the coffin hauled on a sledge, over which was spread instead of a pall, the American flag, we walked in procession, I walked on, with my lantern, a little in advance; then came the captain and officers, the engineer, Dr. Bes-sel and Meyers; and then the crew hauling the body by a rope attached to the sledge, one of the men on the



right, holding another lantern. Nearly all are dressed in skins; and were their eyes to see us, we should look like anything but a funeral cortège. The Esquimaux following the crew. There is a weird sort of light in the air, partly boreal or electric, through which the stars shone brightly at eleven A. M., while (we were) on our way to the grave."

Thus ended Hall's ambitious project of conquering the secret of the North Pole; and thus was quenched the enthusiasm of a singularly ardent nature. Though better fitted for a volunteer than a leader, to act alone than to govern others, he undertook his



GRAVE OF CAPTAIN HALL.

work with a boundless energy, and an untiring perseverance; and, had he lived, it is certain he would have advanced as far to the northward as man is able to go. We cannot but regret so sudden and disastrous a termination of a chivalrous enterprise. Yet there is something appropriate in his place of burial; and that lonely grave amid the peaks and icebergs of the Polar World is surely a more suitable sepulchre for such a dauntless explorer than one in the crowded city cemetery, or even the village churchyard. On no man was the strange magical spell of the North more powerfully laid than on Charles Francis Hall; and it is well that he should sleep where the cold northern winds blow across his grave, and the weird radiance of the aurora falls upon it. The command of the expedition now devolved upon Captain Buddington; one of whose first and most regrettable acts was to discontinue the Sunday service that had hitherto been held, and held with a good effect upon the men.

On the 20th, a violent hurricane arose, and continued for many hours. It was accompanied by a heavy snow-drift, and attended by much breaking up of the ice.

The nights were frequently illuminated by auroras, and their radiance was a welcome innovation on the dreary winter darkness.

Dreary indeed! It was almost impossible to tell night from day, and to go out of sight of the vessel was dangerous in the extreme. It was not alone the darkness that was found oppressive but the silence. When out of hearing of the din and clamor of the disorderly and ill-disciplined crew, the gloom and silence of everything, says Tyson, settled down upon one like a pall. As there were no trees, there was no welcome whistling of the wind among their branches; and out on the open plain the wind buffeted the wayfarer without giving him the slightest warning. Nothing existed that could be ruffled by it, or ever so gently swayed or disturbed, so that the wind was felt before it was heard; unless the traveller chanced to be near a gorge in the hills, down which it would come with a sufficiently formidable roar.

One evening when Captain Tyson had wandered from the ship, he found that, out of the range of the men's voices, no other sound prevailed. It was quite calm, no wind, no movement of any living creature, only the leaden sky above, and the gray, cold ice beneath, and *silence everywhere*. It hung like a shroud over the rigid, stiffened forms of Nature. So painfully oppressive did the wanderer find it at last, that he was frequently tempted to shout aloud and break the spell. At last he felt constrained to do so; but no answer came, not even a responsive echo.

"The space was void; and there I stood,  
And the sole spectre was the solitude."

In February the day began to gain a little on the night, and the men began to recover their strength and spirits. Such is the common experience of all Arctic Voyagers. There can be no doubt as to the ill-effects of long-continued darkness on the mind and body of man; and the explorer of the North, during its terrible winter, is frequently tempted to re-echo the aspiration of Goethe for "Light! more light!" The night of the 21st was distinguished by the appearance of a beautiful paraselene, when four false moons were visible beside the true, or five in all. The true orb of night was surrounded by a halo which also embraced two of the false ones; while the other two had a separate halo, forming a large circle concentric with the first. The two mock moons nearest to the true were fitfully lighted up with prismatic colors, a sight not less beautiful than curious.

It was on the 28th that the sun reappeared, after an absence of one hundred and thirty-five days; but the



cold was still exceedingly severe—the thermometer marking  $37^{\circ}$  below zero.

For March and April several short sledge excursions

were made, with the result of correcting numerous errors in Dr. Kane's chart. The coast line for some fifty or sixty miles was closely examined, as well as its fiords, with their respective glaciers and icebergs.

On the 9th of May, Tyson, Meyers, Joe, and Hans started on a sledge journey, which occupied six days. They struck inland to the east-northeast, and succeeded in reaching Newman Bay; thence proceeded in the same general direction as high as Lat.  $82^{\circ} 9'$ . One day they came upon a herd of musk oxen, of which they slaughtered twelve. These cattle develop their enormous bulk, as whales do, on what seems to be very slender and insufficient diet. Their food is the moss and lichens which grow on the rocks; and to get at it they must first scrape away the snow with their hoofs. There were some calves with the herd, and three of these were killed. At first the hunters failed to see them, for, at the approach of danger, the young ones take shelter under the body of their parents; and such is the length of the hair of the musk-ox that, as it nearly touches the ground, it hangs like a curtain before the calves, completely concealing them from view. The musk-ox is a bulky animal, weighing between five hundred and six hundred pounds, but their legs are very short in proportion to their weight and size, so that their appearance is the reverse of graceful. Hunting the musk-ox is not very exciting sport, for it is as easy to hit as the side of a house. When the herd have been checked by the dogs, and have arranged themselves in a circle, the hunter has nothing to do but to walk up and shoot them.



PARASELENE.

A few lemmings (*Moodus torquatus*) were seen. One of the men caught a live lemming, and the carpenter found a dead one. These lemmings are small rodent, or gnawing animals. Though sometimes called the Arctic mouse, it differs considerably from the common *mus*; its claws are sharp and sickle-shaped, and the fore feet are remarkably long for an animal whose entire length does not exceed five inches. It inhabits the southern as well as the north Polar Regions, but is not found elsewhere. During the summer it burrows in mossy swamps, and in winter between stones and rocks. Its food is exclusively vegetable. When it travels, it follows a perfectly straight course, and nothing but an absolutely insurmountable obstacle can turn it aside.

When it travels, it follows a perfectly straight course, and nothing but an absolutely insurmountable obstacle can turn it aside.



WINTER QUARTERS OF THE "POLARIS."



Early in June a formidable leak was discovered on the starboard side of the stern of the *Polaris*, two planks being badly split. The warm weather now began to act on the ice, which broke up sufficiently to allow of boat excursions. Two were planned: one under the direction of Mr. Chester and Mr. Meyers, the other under that of Captain Tyson and Mr. Bessel. The former came to nothing, the boat being crushed by the fall of an iceberg. The latter proceeded to Newman Bay, but was recalled, for some unexplained reason, by Captain Buddington.

The summer passed away in a very unprofitable manner; the want of discipline and obedience among

sible position, shouted to his men to "throw everything on the ice," and immediately the direst confusion prevailed. The men seized upon the stores, which had previously been brought up from the hold in anticipation of a catastrophe, and flung them overboard indiscriminately. As the vessel, by its rising and falling motion, was constantly breaking the ice, and no care was exercised where or how things were thrown, Tyson, with some of the men, got upon the floe and endeavored to introduce a little order into the chaotic confusion. While they were thus engaged the ice began to crack; shortly afterwards it exploded under their feet and shivered into many pieces; the ship



THE UNWILLING GOOD-BYE OF THE "POLARIS" TO PART OF ITS CREW.

the crew, and of energy and zeal on the part of the commander, proving fatal to all attempts to accomplish the objects of the expedition. The *Polaris* weighed anchor on the 12th of August, and steamed slowly in a southerly direction. But being caught in the ice, she was moored in a floe, and in this way she slowly drifted down Kane Basin into Smith Sound, and on the 4th of October passed Rensselaer Harbor, where Kane had spent the winters of 1853, 1854, and 1855.

During the night of the 15th of October the ship was "nipped" in the ice; and so terrible was the pressure that all on board thought she would be reduced to a wreck. In a moment of panic the captain, who seemed to be totally unfit for his respon-

broke away in the darkness, and was out of sight in a moment.

It was a terrible night, deep darkness, the snow falling heavily, the wind blowing violently. "We did not know," says Tyson, "who was on the ice or who was on the ship; but I knew some of the children were on the ice, because almost the last thing I had pulled away from the crushing keel of the ship were some musk-ox skins; they were lying across a wide crack in the ice, and as I pulled them toward me to save them I saw that there were two or three of Han's children rolled up in one of the skins. A slight motion of the ice, and in a moment more they would either have been in the water and



drowned in the darkness, or crushed between the ice."

When morning came Tyson found that fortunately two boats were lying on the floe to which he and his companions were committed; a nearly circular floe, about four miles in circumference, and diversified like a small island, with hillocks and ponds, or lakelets, the latter formed by the summer melting of the ice. The ice was very various in thickness; some of the mounds or hills were as much as thirty feet thick, others did not exceed ten or fifteen feet.

The little company, thus strangely brought together on a floating piece of ice, numbered nineteen, and included Captain Tyson, Meyers, meteorologist; Heron, steward; and Jackson, cook; Kruger, Jamka, Lindermann, Anthing, Lendquist, and Johnson, seamen; Joe and his wife Hannah and their child Puney; Hans and his wife, Christiana, his children Augustina, Tobias, and Sucri, and his baby, Charlie Polaris (so called because born on board the ship in Polaris Bay), Esquimaux.

The supply of provisions for these nineteen men, women, and children consisted only of fourteen cans of pemmican, eleven and a half bags of bread, one can of dried apples, and fourteen hams; so that if the ship did not return for them, the prospect was dark enough, and its solitary feature of hopefulness lay in the possession of the two boats.

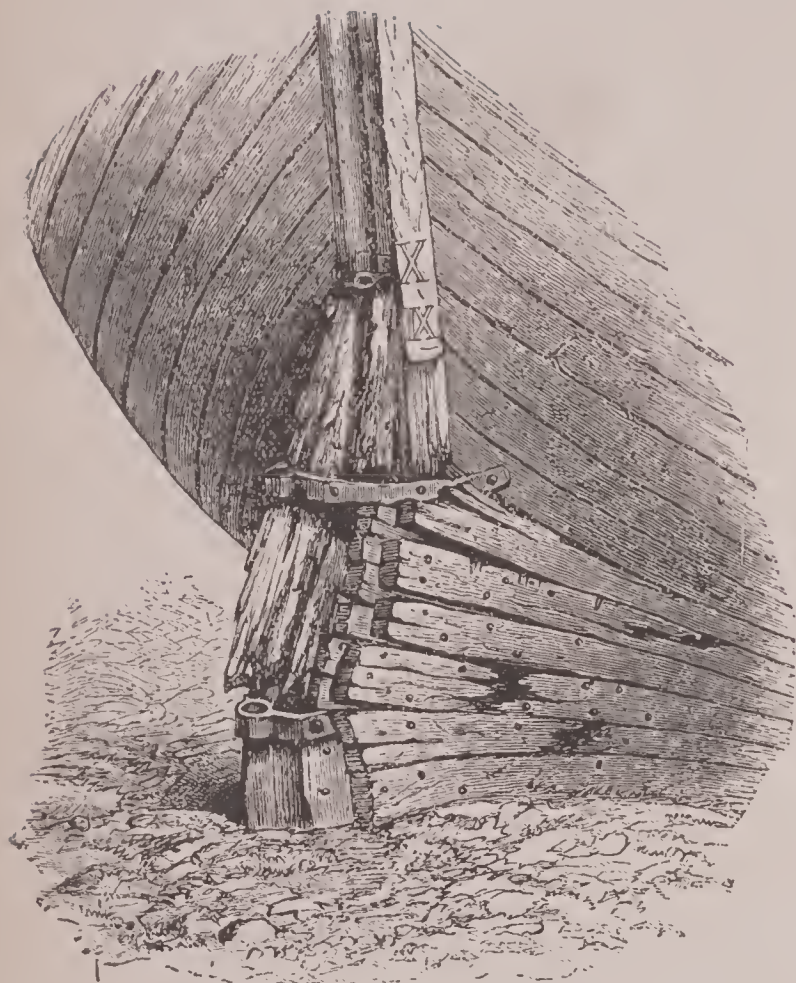
The ice floe on which the party was afloat did not long hold together. On the night of the 16th, a large portion, on which were Tyson and his companions and one of the boats, broke adrift, the other boat, part of the provisions, and the house of poles being lost on the main body of the floe. But by the 21st they recovered these articles, and removed to a larger floe nearer the land, where they built some snow houses. The provisions were utterly inadequate to support the party during the six months of winter, even on reduced rations, the dogs were eaten, and no

seals could be captured, and so, day after day, they drifted on till, on Jan. 9th, they reached the middle of Davis Strait, the cold being 40° below zero. On the 19th the sun reappeared, and during February and March several seals were captured. On the 11th of the last month, a formidable gale struck the floe, and the ice raft broke up into hundreds of pieces, the castaways being left on one measuring about seventy-five yards square, which, fortunately, was of immense solidity. But this small floe quickly began to wear away, and the party took to their boat and safely reached the pack-ice. Continued gales having prevented the capture of seals, reduced them to great distress; some of the men seemed to be losing their senses, and, to put a climax to their misery, a heavy sea carried off their tents, bed clothing, and everything that was movable. It required all the efforts of the men to save the boat. For twelve hours they held on to it "like grim death." Scarcely a word was uttered, except the crying of the children, the orders of Captain Tyson, and the answer, "Ay, ay, sir!" of them. Thus, on the 22d of April, half-drowned, half-frozen, without food or shelter, destruction seemed to be looking them in the face. On the 28th, a steamer was in sight, but she did not see them; still their hopes revived at this proof that they were in the path of vessels. Next day another steamer hove in sight, again to disappoint them; then, on the morrow, a third appeared, and passed them; but on the 30th, a fourth was discovered in the fog. The Esquimaux Hans paddled toward her, in a few minutes she was alongside the piece of ice. She proved to be the *Tigress*, a Newfoundland sealer, who at once sent their boats to the relief of the much-tried explorers. The *Tigress* and her passengers reached St. Johns, May 12th, and they were transferred to the United States steamer *Frolic*, which landed them at Washington, June 5, 1873.



## CHAPTER X.

## THE SEARCH FOR THE POLARIS.



A RUDDER CRUSHED BY ICE.

ON the arrival home of Captain Tyson and his party, and their report of their departure from the *Polaris*, it was resolved to send an expedition in search of the missing ship. The *Tigress* was purchased for this purpose, and duly equipped, and the *Juniata* was sent to establish a coaling depot for her at Disco Island. The *Tigress* left New York July 14, 1873, and arrived at Littleton Island where the *Polaris* had gone adrift, about the middle of August. Here the rescuing party learned that the *Polaris* had been abandoned by Captain Buddington, that he had ventured on the mainland, had built two boats with wood, and canoes from the ship, and had sailed southward

about the time "when ducks begin to hatch," and that the *Polaris*, soon after his departure, had foundered. Captain Greer took possession of all the relics of the expedition that he could find, and returned to St. Johns, Newfoundland, where the first words he heard were: "The *Polaris* party are safe."

We now return to the *Polaris*. On the night that she broke away from the ice, she had on board fourteen officers and men—namely, Captain Buddington, Chester and Morton, the first and second mates; Schuman and Odell, chief and assistant engineers; Campbell and Booth, firemen; Coffin, carpenter; Sieman, Hobby, Hays, and Manch, seamen; Dr. Bessel, chief of the scientific staff; and Bryan, the astronomer and chaplain.

Leaking heavily, and with her anchors gone, the *Polaris* was driven by the wind in a northeasterly direction. At length steam was got up, and the vessel got under some degree of control. A look-out was kept, it is said, from the mast-head, for the two boats and their companions; but as they could not be seen and it was supposed they would accomplish their voyage in safety, Buddington put the vessel in-shore, and moored her off Kane's Life-boat Cove (Lat.  $78^{\circ} 23' 30''$  N., and Long.  $73^{\circ} 21'$  W.). She had sustained such serious injuries that the wonder was she had kept afloat so long; and as it seemed impossible to repair her, Buddington resolved on permanently abandoning her, and on conveying to land all the food, fuel, and the articles most necessary for building a house and supporting himself and companions during the winter. Some days were occupied in the work of unloading, and the *Polaris* was then abandoned to her fate.

The house erected by the survivors of the *Polaris* was constructed with the ship's spars, bulkheads, and sails. It measured 22 feet in length and 14 in width, and was surrounded by a bank of snow to protect it from the Arctic winds. A stove insured its warmth; and comfortable sleeping-berths for fourteen persons were built up around its sides. Implements for cooking were brought from the



*Polaris*, as well as a table, lamps, and other conveniences.

In the course of a few days, a party of native Esquimaux arrived in five sledges. They proved of great assistance to the white men, and rendered any services that were required of them, in return for a few knives, needles, pieces of wood and iron, or other trifling articles. Some of them built their huts in the vicinity, and prepared to winter there. The women were of great utility—making and repairing clothing, and “performing other feminine courtesies for the men;” while the native hunters, as the season advanced brought to the house a plentiful supply of fresh meat. In these circumstances, it is not astonish-

ing, or setting traps for foxes. Happily as their historian remarks, food was never wanting nor even scarce; they were well-fed, well-clothed, and well-sheltered. How striking a contrast to the wretched condition of their comrades adrift on the raft of ice!

They had no boats, however, and they set to work to supply this deficiency. Materials were abundant, and they enjoyed the advice and assistance of the ship's carpenter. Each boat was twenty-five feet in length, square fore and aft, and five feet beam—capable of carrying seven men, with provisions for about two months; in which time, it was supposed, they would undoubtedly reach a latitude where assistance would be obtainable. The timber used was



IN BAFFIN'S BAY.

ing that Captain Buddington and his party experienced but few of the severities of an Arctic winter.

When fairly settled, the whole party fell into a regular daily routine of the easiest character. Dr. Bessel and Mr. Bryan continued their scientific observations; and others whiled away the time in reading, writing, playing at chess, draughts and cards. There was also the house work to be done; ice blocks to be cut for melting, fire replenished, lamps trimmed, the meals cooked; and when in February, the coal supply became exhausted, wood for firing purposes had to be cut from the *Polaris* and brought ashore. When the mild light of spring broke over the far northern seas, there were many opportunities for going in search of game, or seal

chiefly taken from the *Polaris*—such as the ceiling of the alley-ways and after-cabin. The difficulties of the work were great, but not insurmountable. The two boats were finished; and also a third and smaller one, which was presented to the friendly natives.

A little after one o'clock, on the morning of the 3d of June, the boats received their cargoes of provisions and other necessary articles. The party was equally divided—seven in each boat; and bidding farewell to the Esquimaux and their winter home, they launched out into the free waters of Smith Sound, and turned their prows southward.

With the exception of slight scorbutic affections in a few of the men, they had enjoyed wonderfully good health throughout the Arctic winter and spring. It



was now summer, and the sun was constantly above the horizon. Neither against cold nor darkness was it necessary now to struggle. The voyage before them, except for occasional interruption from pack-ice, was a pleasant excursion. Wherever they put ashore they found sea-birds, seals, and other game in abundance; and occasionally the eggs of the eider and other ducks figured in their bills of fare.

As they proceeded on their voyage, they touched on the Esquimaux settlement of Etah-y-tamy, but found it abandoned; also at Ilakluyt Island; and afterwards they landed on the west shore of Northumberland Island, where they were detained until the 10th by the pack ice. Putting to sea again, the ice carried them back to their point of departure. But on the 12th the prospect was more favorable, and they set sail for the second time. Crossing the southern part of Murchison Sound, they doubled Cape Parry, and rested for awhile at Blackwood Point. Continuing their voyage on the following day, they reached and landed on Dalrymple Island; afterwards at Wolstenholme Island and Cape York.

Thus far, says Mr. Blake, their course had been comparatively easy; but they were now called upon to encounter the ice of the glacier-fed Melville Bay; and here considerably greater exertion was required of them—the water-ways frequently closing up, so that they had to haul their boats across the ice until they came to another open “lead.” Their troubles were not, however, of long duration. On the 20th day from their departure and soon after entering upon the difficult waters of Melville Bay, they sighted a steamer in the distance. They were then twenty-five miles southeast of Cape York.

True, they perceived that the vessel was beset, and could not come to them; and she was some ten miles away. But being beset, she was sure to remain until they could get to her; and the relief appeared all the more timely, since one of the boats had been injured in its contact with the ice, and only about one week's provisions remained. The party had evidently over-eaten their rations, or had not rightly estimated them.

Two men were sent forward toward the steamer, but had traversed only a portion of the distance when they were met by a body of eighteen men from the ship—which proved to be the *Ravenscraig* of Dundee, Captain Allen, lying in Lat.  $75^{\circ} 38' N.$ , Long.  $65^{\circ} 35' W.$ , Cape York being to the northwest, at about twenty-five miles distant.

“The party on the ice had been sighted by the lookout on the vessel at about 1 A. M. (it being light

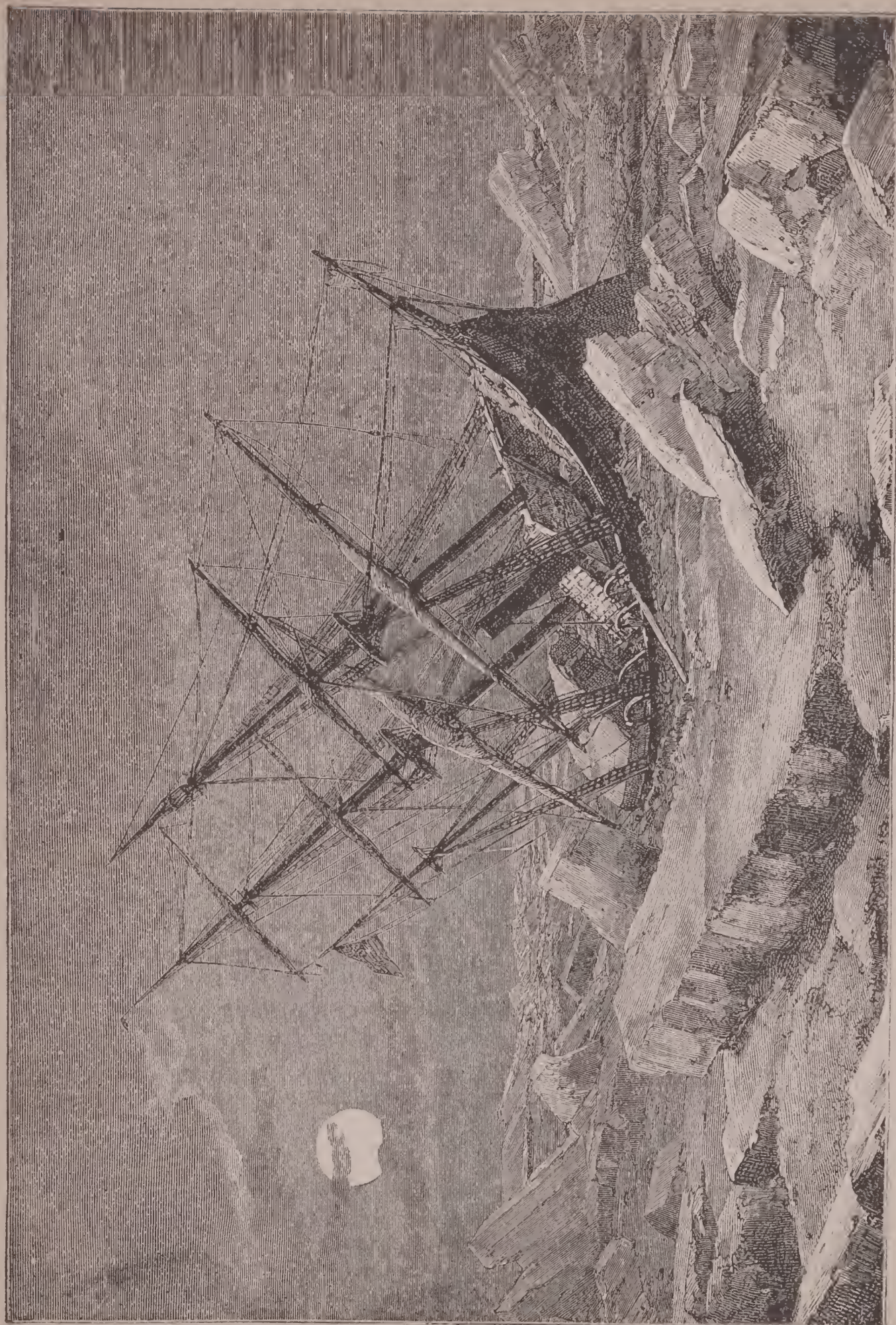
all the time then); they were at that time about fourteen miles off, and were supposed to be Esquimaux. By nine o'clock it was observed that the party were moving toward the vessel, but very slowly; not having made more than two miles since first seen; and it was now discovered that they were not natives, but white men. This naturally increased the interest on board. It was perceived that they had two boats, and their colors on a pole. Volunteers were now ready to go to their relief, and eighteen picked men were chosen for the purpose; Captain Allen also hoisting his ensign as an encouragement to the wanderers.

“Captain Buddington and his party were intensely gratified to see that they had been noticed, and all watched with the greatest anxiety the progress of the two men who had gone forward toward the vessel. But when the rescuers were seen returning with them, every heart was relieved, and weariness gave place to the joy of anticipated security.

“The boats had been considerably injured by contact with the rough, hummocky ice, and one of them was slightly stove in, but had been repaired. The fatigue of dragging boats over such ice may be partly imagined when we find that it took the combined party of thirty-two from 6 P. M. until midnight to get to the vessel—a rate of two miles an hour. The difficulty had been greatly increased by a deep slushy snow, which was spread over the entire surface, and was not only heavy and disagreeable to wade through but was not without its real dangers, as more than one found by suddenly sinking into some treacherous hole which was concealed by it. One of the men had great difficulty in extricating himself from one of these hidden pitfalls; indeed, without assistance, the accident might have proved fatal.”

On board the *Ravenscraig* Captain Buddington and his companions were most hospitably entertained, but as she was not homeward bound, her captain, as soon as possible, transferred them to the *Arctic* and the *Intrepid*, which, having completed their work in the Polar seas, were about to sail for Dundee. The *Arctic*, with Captain Buddington and ten of his party, reached that port on the 18th of September, 1873. Embarking on board the *City of Antwerp*, they arrived safely at New York, on the 4th of October; and were followed, a few weeks later, by Mr. Bryan and his two companions, who had been transferred to the *Intrepid*, and from that to the *Erick*. Thus every member of the ill-fated *Polaris* expedition arrived safely at their homes, except its gallant and enthusiastic leader, whose ambitious hopes had been so sadly and fatally extinguished.





THE "JUNIATA" IN THE ICE-FIELDS.



## CHAPTER XI.

## THE ENGLISH EXPEDITION OF 1875.—THE "ALERT" AND "DISCOVERY."



IN the year 1875, the British Government despatched an expedition to the Arctic region, under Commander Nares, with instructions to explore as considerable a portion of the unknown Polar Regions as was possible with the means at his disposal.

The expedition, then, in the first place, had to force its way through the ice-encumbered channel which connects Baffin

Bay with the Polar Ocean; a channel which successively bears the names of Smith Sound, Kane Basin, Kennedy Channel, Hall Basin, and Robeson Strait. Smith Sound opens out of Baffin Bay between Capes Alexander and Isabella.

The *Alert* and the *Discovery* left the shores of England in May, 1875. After a voyage of five weeks' duration they arrived at Lively, the port of Disco Island, on the west coast of Greenland. This small settlement numbers about ninety-six inhabitants, Danes and Esquimaux—generally speaking, a mixed race. The Danish Inspector of North Greenland resides here, and he received the expedition with a salute from three brass cannon planted in front of his house. There is a well-conducted school, attended by about sixteen children; and a small church, where the schoolmaster reads the Lutheran service on Sundays, the priest coming over from Upernavik occasionally, to perform marriages, christenings, and other religious services.

The *Alert* having taken on board thirty Esquimaux dogs and a driver, the expedition left Disco at one

o'clock on the morning of July 16th, and next morning reached Kiltimbunt, about thirty miles further north. Kiltimbunt is a little island in the Strait of Weigat, between Disco and the mainland. Here the *Discovery* took on board thirty dogs; and shooting parties from both ships made a descent on a "loomery" or "bird-bazaar," frequented by guillemots, kittiwakes, and other ocean birds. Two or three days later the expedition arrived at a settlement named Proven, where it was joined by the Esquimaux dog-driver, who has already figured so conspicuously in these pages, Hans Christian, the attendant of Kane, Hayes, and Hall, in their several expeditions. At Proven, the adventurers received and answered their last letters from "home."

Striking northward through Baffin Bay they reached Cape York on the 25th of July, and met with a company of the misnamed Arctic Highlanders, who traversed the ice-floes in their dog-sledges, and soon fraternized with the seamen. A narwhal having been harpooned, a quantity of the skin and blubber was given to the Esquimaux. Mr. Hodson, the chaplain of the *Discovery*, describes them as exceedingly greedy and barbarous, eating whatever fell in their way, but living chiefly upon seals. They were not so far advanced in civilization as to be able to construct kayaks, and apparently they had never before seen Europeans. They wore trousers of bear-skin and an upper garment of seal-skin.

Proceeding northward by Dr. Kane's Crimson Cliffs, they soon reached that brave explorer's celebrated winter quarters, Port Foulke, and took advantage of a day's delay to visit the Brother John Glacier which we have already described. They found Dr. Kane's journal, but no relics; shot a reindeer and a large number of birds.

Between Melville Bay and the entrance to Smith Sound no ice was met with; but on the 30th of July the "pack" was sighted off Cape Sabine, in Lat. 78° 41' N. Here at Port Payer, the ships were fast held by the ice for several days. An attempt to proceed



further northward was made to the west of the islands in Hayes Sound; but the water-way not leading in the right direction, the ships returned. On the 6th of August they made a fresh start, and thenceforward maintained an uninterrupted struggle with the ice. The *Alert* led the way with Captain Nares in her "crow's nest," anxiously looking out for practicable channels. At Cape Frazer the huge, solid mass again delayed them. Then they succeeded in crossing Kennedy Channel to the east side, and

dred miles further to the north, as all had anticipated, found herself on the border of what was evidently a very extensive sea, with impenetrable ice on every side. As no harbor could be found, the ship was secured as far north as possible, inside a kind of embankment of grounded ice close to the land. There she passed the winter; and during the eleven months of her detention no navigable water-way, through which she could move further to the north, presented itself. Far from meeting with the "great



"ALERT" AND "DISCOVERY."

took shelter in Petermann Fiord—so named after the great German geographer. After a few days, they again pushed northward; and on the 25th of August, after many narrow escapes from being crushed in the ice, a well-sheltered harbor received them, on the west side of Hall Basin, north of Lady Franklin Sound, in Lat.  $81^{\circ} 44' N$ . This was at once selected as the winter quarters of the *Discovery*. Her sister ship continuing her course, rounded the northeast point of Grant Land; but instead of falling in with a continuous coast line, stretching one hun-

dred miles further to the north, as all had anticipated, found herself on the border of what was evidently a very extensive sea, with impenetrable ice on every side. As no harbor could be found, the ship was secured as far north as possible, inside a kind of embankment of grounded ice close to the land. There she passed the winter; and during the eleven months of her detention no navigable water-way, through which she could move further to the north, presented itself. Far from meeting with the "great

Polar Sea" dreamed of by Kane and Hayes, our adventurers discovered that the ice-barrier before them was unusually thick and solid. It looked as if composed of floating ice-bergs, which had gradually been jammed and welded together. This was named by Captain Nares the Palæocrystic Sea, or "Sea of Ancient Ice."

Ordinary ice does not exceed ten feet in thickness; but in the Polar Sea, generation after generation, layer has been superimposed on layer, until the whole mass measures from eighty feet to one hundred and



twenty feet; it floats with its surface nowhere less than fifteen feet above the water-line. It was this wonderful thickness which prevented the *Alert* from driving ashore. Owing to its great depth of floatation, sixty feet to one hundred feet, the mass grounded on coming into shallow water, and formed a breakwater within which the ship was comparatively secure. When two pieces of ordinary ice are driven one against the other, and the edges broken up, the crushed pieces are raised by the pressure into a high, long, wall-like hedge of ice. When two of

spare spars, and otherwise preparing for the winter. The first day ashore they shot a herd of eleven musk-oxen. A few days afterwards the sea was frozen all around the ship, so that they could freely move to and fro about on the ice. A week later they saw a large number of musk oxen, and shot about forty, thus laying in a considerable supply of provisions.

Their winter port, which was surrounded by snow-clad hills about two thousand feet high, they christened Discovery Harbor. As soon as the sea was completely frozen over, the sledging parties were organ-



MUSK OX.

the ancient floes of the Polar Sea meet, the intermediate lighter broken-up ice which may happen to be floating about between them, alone suffers; it is pressed up between the two closing masses to a great height, producing a chaotic wilderness of angular blocks of all shapes and sizes, varying in height up to fifty feet above the water, and frequently covering an area of upwards of a mile in diameter.

We must now return to the *Discovery*. As soon as she had taken up her winter quarters the crew began to unload her, landing the boats, stores, and

ized and duly dispatched; but as the autumn was rapidly passing, very little could be done in this direction. The usual preparations on the part of the Arctic explorers were then made for "hibernating." Houses were built, also a magnetic observatory, and a theater of ice recalling the glittering edifice constructed by Catherine II, of Russia on the Neva, and celebrated by Cowper in the well-known lines:

"No forest fell  
When thou wouldst build, no quarry send its stores  
To enrich thy walls; but thou didst hew the floods,  
And make thy marble of the glassy wave."



A smithy was erected on the 11th of November, being the first the Arctic Sea had ever borne. Its roof was made of coal bags cemented with ice. The ship's stoker reigned supreme in it as blacksmith; and when we consider the accessories—the ice, the snow, the darkness—we must admit that his blazing forge must have made a curious picture. The chaplain tells us humorously that the smith adorned the interior wall with a good many holes, as each time that his iron wanted cooling he simply thrust it into the ice.

As for the theatre, which, as we know, has always

been a favorite source of amusement with Arctic explorers when winter-bound, it was sixty feet long and twenty-seven feet broad, and in honor of the Princess

of Wales was named "The Alexandra." Her birthday was selected as the day of opening—December 1st—and the opening piece was a popular farce, "My Turn Next." As sailors are generally adepts at dramatic personations, we may conceive that the piece "went well," and that the different actors received the applause

they merited. It is recorded that foremost among them was the engineer, Mr. Miller, who appears to have been emphatically the *Polar Star*. Several



LITTLE AUKS.



CAPE AUK.



of the men sang songs, and recitations, old and new, were occasionally introduced, the result of the whole being to divert the minds and keep up the spirits of the ship's company during the long, long Arctic nights.

A fine level promenade had been constructed on the ice, about a mile in length, by sweeping away the snow, and this served as a daily exercise ground. A skating rink was also constructed. A free hole in

on the lower deck; after which the captain and officers visited the men's mess, tasting the Christmas pudding, and examining the tasteful decorations which had been improvised. Then the gifts which, in anticipation of the day, had been sent out by kindly English hearts were distributed by the captain—to each gift the name of the recipient having been previously attached. This was an affecting scene; and hearty, though not without a touch of pathos in them,

were the cheers given as the distribution took place; a distribution recalling so many "old familiar faces," and all the sweet associations and gentle thoughts of home.

A few particulars of the "situation" may here be given in the chaplain's own words. "We had brought fish, beef, and mutton from England," he says, "all of which we hung up on one of the masts, and it was soon as hard as a brick and perfectly preserved. We had also brought some sheep from England with us, and they were killed from time to time. When we arrived in Discovery Bay, as we called it, six of them were alive, but on being landed they were worried by the dogs, and had to be slaughtered. During the winter the men

had to fetch ice from a berg about half a mile distant from the ship, in order to melt it for fresh water."

At last the long Arctic night came to an end. It was with emotions of hope and gratitude and joy that the explorers welcomed the first rays of the returning sun on the last day of February. For four months they had lived in obscurity and gloom, with the exception of such relief as the stars and moon had occasionally afforded. On the day of the sun's return to the Polar World, it was known that it would rise at about 12 o'clock, and everybody ascended the hills for the purpose of hailing the glorious spectacle. The mist and fogs, however, baffled their expectations; and, though they *felt* its influence, they did not see it for some days after it had mounted above the horizon.

News was brought from the *Alert* by two officers and two men towards the end of March. They had accomplished the journey with the thermometer at 40° below zero, and had occupied six days in making it. The officers were Lieutenant Rawson and Mr. Egerton, who had started at first in company with Petersen, the interpreter, but had been compelled to return with him because he was severely frost-bitten.



THE "ALERT" ON SHORE.

the ice, for the sake of better ventilation, was carefully kept up. Whenever it closed, through a process of gradual congelation, the ice-saws were set in motion to open it up again, or it was blasted with gunpowder. The dogs lived on the ice-floe all the winter. It must not be thought that the cold was uniform day after day. Probably it is not the *low* temperature that makes an Arctic winter so very trying to the European. In a few hours the change would be no less than 60°. The cold reached its height or depth in winter, when the thermometer marked 70½° below zero, the greatest cold ever experienced by any Polar expedition. It is difficult for the human frame to bear up against this excess of rigor, even with the help of good fires, good fuel, and good clothing. Not only the physical but the mental faculties are debilitated and depressed.

Our ice-bound seamen, however, managed to keep Christmas merrily. Early on the day, so dear to Christian memories, "the waits" went their usual rounds—a sergeant of marines, the chief boatswain's mates, and three other volunteers—singing Christmas carols, and making "a special stay outside the captain's cabin." In the forenoon prayers were said



"But the crowning glories of this ever-memorable campaign were," as Mr. Markham exclaims, "achieved during the spring." Three main sledge expeditions were organized; one, under Commander Markham and Lieutenant Parr, instructed to keep due north, as far as possible, into the newly-discovered Polar Ocean; another, under Lieutenant Aldrich, to explore the American coast westward; and the third, under Lieutenant Beaumont, of the *Discovery*, to survey the north coast of Greenland, facing eastwards. Each party consisted of two sledges; and the six, with their gallant crews, set out on the 3d of April, 1876, determined to vindicate and maintain the reputation of British seamen. They separated at Cape Joseph Henry; and before they again met this was what they achieved:

Commander Markham and Lieutenant Parr pushed northward as far as Lat.  $83^{\circ} 20' 26''$  N.; being the most northerly point which any explorers had then attained.

Lieutenant Aldrich struck westward; rounded Cape Colombia in lat.  $83^{\circ} 7'$  N.; and explored 220 miles of American coast line, previously not laid down on any map.

Lieutenant Beaumont crossed Robeson Strait, surveyed the northern coast of Greenland for about seventy miles.

"In order," it is said "that these three main parties might do their work successfully, every soul in the two ships was actively employed. The depot and relieving parties did most arduous work, and the officers vied with each other in promoting the objects of the expedition, while the most perfect harmony and unanimity prevailed. Captain Feilden and Mr. Hart were especially active in making natural history collections; and Lieutenants Giffard, Archer, Rawson, Egerton, and Conybeare did admirable work in exploring and keeping open communications."

When the sledge parties returned to the ships, Captain Nares found that they had suffered terribly; but he also found that their success had been complete. They had solved a geographical problem; no open sea surrounded the Pole, as so many sanguine spirits had anticipated. The way northward was over a waste of ice—of ice broken up into hummocks and ponderous masses. And with the appliances they possessed further progress was impossible; the expedition had reached its *ne plus ultra*.

The work was done, and Captain Nares perceived that nothing more could be gained, while valuable lives might be lost by remaining longer in the Polar Ocean.

Water flowed in the ravines on the 1st of July. After that day the thaw gradually extended, and increased in rapidity; and on the 23d a strong southwest wind drove the pack a mile away from the shore. On the 26th a cairn was erected on the shore, and a record of the work of the expedition deposited in it; and on the 31st, a passage having been cleared



GREAT AUK.

through the winter-barrier of icebergs, the *Alert*, with a strong southwest wind filling her canvas, pushed out into Robeson Channel on her homeward voyage. After a run of two miles along shore, through a fairly open way between the pack ice and what Dr. Kane calls the "ice-foot," she was checked in her course by a heavy floe, one and a half miles in diameter, which almost touched the land; and no other shelter being available, she lay up in a small



cove or creek, among a group of icebergs that had gone ashore in the shallows. The obstructive floe showed signs of movement early on the morning of August 1st; and soon afterwards went away to the northward at the rate of a mile and a half an hour, grinding along the ice-foot somewhat alarmingly as it advanced towards the ship. Steam being up, however, the *Alert* cast off her moorings, and succeeded in edging between the land and the floe; while the latter swung round in-shore with a violent jerk, close to the position which the ship had previously occupied. The *Alert* kept onward, so close to the cliff that the boats hung at her quarter frequently touched it, until again brought to a stop near Cape Union by the accumulation of the pack. Her captain, however, was able here to secure her abreast of a large stream, the current of which had undermined the ice-cliff for some fifty yards, and floated it off to sea, leaving a kind of cove or harbor where the ship could be laid alongside the beach in such a manner that, if the pack struck her, it could only force her on shore.

When the tide had turned, and began to flow southward, it broke up the ice all around Cape Union, and formed a narrow water-way, which offered Captain Nares a chance of escape. Steam was got up immediately, but, owing to unavoidable delay in shipping the rudder, the ice closed in before the ship could be carried round. Her last stage was worse than her first; for she was now cut off from her safe little port, and no better shelter was available than a slight hollow or break in the ice-cliff. Here, however, she was brought to with the ice-blocks swirling past her at a distance of twenty yards. At low water Captain Nares cast off, and bored some way into the pack, so that the *Alert* might drift round the cape with the southern tide. At about a quarter of a mile from the land, she drove along with the ice; and, when the tide slackened, steamed out of the pack before it began to set to the northward. Then, keeping close in to the ice-foot, she kept slowly on her course to the southward, the water-way broadening as she approached Lincoln Bay, which was crossed without difficulty. When within five miles of Cape Beechy, the tide turned; but after a short delay a channel opened, allowing the ship to round the cape. At this point the ice-cliff ceded, and the land slopes gently to the shore, which is protected by a barrier of icebergs, similar to, but smaller than, those which line the shore of the Polar Sea. Here the ship was made fast in three fathoms of water, within twenty yards of the shore about a mile to the south of the cape.

While the *Alert* was thus imprisoned, the huge

pack-ice in the offing was carried up and down the strait by the tidal movement, the wind having the effect of increasing the velocity of the current and the duration of its flow both northward and southward. The ice generally was of a lighter character than that in the Polar Sea; but many heavy Polar floes were driven southward by the gale, and set into Lady Franklin Sound and Archer Fiord rather than down Kennedy Channel. Lady Franklin Sound, indeed, seems to be the receptacle of all the heavy ice that comes south through Robeson Channel; retaining it until the prevailing westerly winds carry it once more to the northward, and empty the sound, previous to its being refilled on the return of the northerly gales.

The gale of the 6th of August was very violent. The tide rushing southward drove a succession of heavy floe-pieces against the small bergs that protected the ship, and capsized one of them completely. It was firmly aground when struck by the point of a large floe; but such was the force of the collision that it was reared *up* erect in the air to its full height of at least sixty feet above water, when, turning a complete somersault like a practised gymnast, it came down on its back with a shock that shattered it into pieces, and raised a wave sufficient to roll the ship considerably. Into the gap thus caused moved the ice, until at last it *nipped* the *Alert*, though not dangerously. That same evening, Lieutenant Rawson and two seamen arrived from the *Discovery* with news of the ill-fortune that had overtaken the Greenland sledge-party.

To free the ship from the ice required three days' labor by all hands, and it was not till the 22d of August that a passage could be found, and the two ships steamed as far southward as Cape Collinson, with no other trouble than dense snow-storms, mists, and strong head-winds. But off the cape, the *Alert* having to back to escape a nip, she fouled the *Discovery* for a moment; the latter escaping, however, with nothing worse than the loss of a boat's davit. The ice gradually breaking up before a strong southwest wind, the two ships crossed Scoresby Bay, which was perfectly clear, but rolled with a heavy sea. As they approached Cape Frazer, they were buffeted by a terrible gale, and put in to Maury Bay; anchoring among a quantity of grounded ice. Three days were spent in arduous efforts to double Cape Frazer—the meeting-point of the flood-tides; north and south, one from the Polar Ocean, and the other from the Atlantic—and Cape Hayes, the boundary-mark of the channel. Then the voyagers, with glad hearts, passed



into Smith Sound; and hugging the shore as closely as was safe, arrived on the 29th at Prince Imperial Island in Dobbin Bay, "everyone heartily thankful to be out of the pack, clear of the struggling icebergs, and for the ships to be secured to fixed ice once more."

The temperature now sunk again below freezing point. The brief Arctic summer was over, and day and night the young sea-ice formed continuously. The mists that hitherto accompanied the ships cleared away before a brisk northerly wind, and revealed a

A day or two later Captain Nares landed on Washington Island, and visited a cairn, which he had raised there on the 12th of August, 1865. He visited, also, two old cairns erected by former explorers; the lichens, with which they were gray, proved that they were of earlier date than Dr. Hayes's expedition.

On the 3d of September, by dint of steaming assiduously, the ships rammed their way through a lane of water to the westward of Cape Hawks, which was inconveniently obstructed by loose pieces of old ice. After rounding the cape, says the captain, the pack,



THE "DISCOVERY" ON SHORE.

magnificent panorama of lofty mountains, white with shrouds of snow, and deep valleys filled with colossal glaciers. One of these stretched downwards to the shore and threw off great icebergs which floated or stranded in Dobbin Bay. It was named after Empress Eugenie, who had taken a lively personal interest in the expedition.

Crossing Dobbin Bay on the 1st of September, the voyagers came within a quarter of a mile of a dépôt of provisions established near Cape Hawks in the previous autumn, and succeeded in removing a portion.

by drifting away from the land, had left unfrozen water and numerous detached small floes, which forced them to make a very serpentine course, and occasionally to pass within thirty yards of the low ice-foot on the shore, fortunately always finding deep water. In this way they reached Allman Bay, half-way between Cape Hawks and Franklin Pierce Bay. Meeting here with a belt of new ice, the *Discovery* was sent ahead; and under full steam she forced a channel through the ice, which was from one to three inches thick. From the lofty hills in the interior a



huge glacier leads down to Allman Bay; and it is a noticeable fact that always in the neighborhood of a glacier-stream the water was found nearly fresh, and of the temperature of  $32^{\circ}$ .

On the 7th the homeward-bound ships reached Norman Lockyer Island, on the margin of Princess Marie Bay. The season was now far advanced, and, as the slightest mistake might have led to the vessels being ice-bound for the winter, the two captains ascended to the highest point of the island to obtain some idea of the prospect before them. They were much relieved by seeing a large area of open water some twenty miles distant, which they conjectured would extend to the mouth of Smith Sound. No time was lost in getting under way; and the ships crossed two-thirds of the distance before they fell in with ice. By charging it under full steam, they cleared the obstacle, and then, through an open-water channel, ran on to Cape Sabine.

On the 9th of September, they arrived off Cape Isabella, where they found a small packet of letters and newspapers, which had been left at the depot by

the *Pandora*. The weather was now calm, and the wind favorable. Sail was hoisted, therefore, as the supply of coal began to run short, and on the evening of the 12th, the expedition reached Bardin Bay. During the 13th and 14th they worked southward into Wolstenholm Sound; and thence, with a southeasterly wind, crossed to Byam Martin, which they reached on the 16th. Two days later they entered the well-known waters of Melville Bay; on the 25th they arrived at Disco, where, and afterwards at Egedesminde, they obtained some small supplies of coal.

Egedesminde was left behind on the 2d of October, and on the 4th the two ships recrossed the Arctic circle—exactly fifteen months from the time of crossing it on the outward voyage. Experiencing adverse winds, they made but slow progress to the southward; and, as the weather became warmer and damper, a few of the men suffered from rheumatism and catarrhs. During a heavy gale on the 19th, the two ships separated; but, both as we have seen, reached the shores of England in safety.

## CHAPTER XII.

### DISCOVERIES OF THE "TEGETTHOFF."—1872-1874.

THE comparative failure of the German Arctic expedition directed the attention of Polar explorers to the seas of Novaya Zemlya, or Nova Zembla as it appears in many maps. Austria first resolved to attempt the task, and after a preliminary expedition of the *Isbjörn*, under Lieutenant Weyprecht, the Austro-Hungarian Government dispatched the *Tegetthoff* to pass two or more winters in the ice. On June 14th, she left Bremerhaven. She was a ship of 220 tons, fitted out for two years and a half, with coal enough to supply the daily wants of the crew and sixty days steaming. The crew consisted of Germans, Slavonians, Hungarians, and Italians, Lieutenants Weyprecht and Payer in command, and all on board had bound themselves by a formal deed to renounce every claim to an expedition for their rescue.

On July 3d, the *Tegetthoff* arrived at Tromsøe, where she remained some time completing her equip-

ment, and replenishing her stock of coals. On the 13th, after hearing mass, they left the little town, steering towards the north, and on the 16th sighted the North Cape.

The rest of the story is best told in Lieutenant Payer's words, which, with some unessential omissions, we reproduce:

"Unfavorable winds had hindered our progress for some days; we now encountered heavy seas. On July 23d a sudden fall of the temperature and dirty rainy weather told us that we were close to the ice, which we expected to find later and much more to the northward, and on the evening of July 25th, Lat.  $74^{\circ} 0' 15''$  N., we actually sighted it, the thermometer marking  $32.5^{\circ}$  F., and  $34.5^{\circ}$  F. in the sea. The northerly winds, which had prevailed for some time, had broken up the ice, and it lay before us in long, loose lines. Though surprised at finding the ice so



far to the south, we never imagined that this was anything but a collection of floes, which had drifted out, perhaps, from the Sea of Kara through the Straits of Matotschkin. But only too soon the conviction was forced upon us that we were already within the Frozen Ocean, and that navigation in the year 1872 was to differ widely from that of the preceding year. On July 26th, while steering in a northeasterly direction, the ice became closer, though it was still navigable; but we nowhere saw heavy fields. The temperature of the air and the sea fell rapidly, and during the two following weeks it remained below the freezing point almost uniformly, and without any essential difference between day and night.

"The ice gradually became closer; July 29th, we were able to continue our course only under steam, and heavy shocks were henceforward inevitable; in many cases the vessel could not force a passage except by charging the ice. In the night a vast, apparently impenetrable barrier stopped our progress; but the tactics of charging under steam again cleared a passage, and we penetrated into a larger 'ice-hole.' We now glided along over the shining surface of its waters, as if we were navigating an inland lake, save that no copsewood clothed the shores, but pale blocks of ice, which the mist, that now fell and enveloped us, transformed into the most fantastic shapes, and at last into mere shapelessness itself. In all that surrounded us neither form nor color was discernible; faint shadows floated within the veil of mist, and our path seemed to lead no whither. A few hours before the glowing fire of the noonday sun had lain on the mountain wastes of Novaya Zemlya, while refraction raised its long coast high above the icy horizon. Nowhere does a sudden change in Nature exercise so immediate an effect on the mind as in the Frozen Ocean, where, too, all that brings delight proceeds from the sun.

"We had sailed over one 'ice-hole,' and again a dense barrier of ice frowned on us; as we forced our way into it, the ice closed in all round us—we were 'beset.' July 30th, the *Tegetthoff* remained fast in her prison; no current of water, nor any movement among the floes lying close to us was discernible; a dead calm prevailed, and mist hung on every side. On the following day we made vain efforts to break through a floe which lay on our bows. The calm still prevailed Aug. 1st, and no change was to be seen in the ice. Aug. 2d, the crew began with hearty goodwill the toilsome work of warping, but with no success, the smallness of the floes hardly admitting of this manoeuvre. In the evening of the same day it

seemed as if a fresh breeze would set us free; but after we had gone on for a few cable-lengths, a great floe once more barred the route, while at the same time the wind fell. At length, when the ice became somewhat looser, we got up the engine fires, and in the following night broke through, under steam, a broad barrier of ice, which separated us from the open coast-water of Novaya Zemlya. In the morning of Aug. 3d, we forced our way into coast-water.



PAYER.

twenty miles broad, to the north of Matotschkin Schar, and steered due north, the mountainous coasts still in sight. A belt of ice 105 miles broad lay behind us. The country greatly resembled Spitzbergen, and we observed, with pleasure, its picturesque glaciers and mountains rising to the height of nearly 3,000 feet, though inconsiderable compared with the mountains of Greenland. Far and wide not a fragment of ice was to be seen; there was a heavy swell on, the air was unusually warm (41° F.): in the evening rain fell, and on Aug. 4th, we had dense mists and driving snow-storms, which forced us to keep to the west of Admiralty Peninsula. During the



night of Aug. 6th, the snow-storms were heavier than before, and the deck was quite covered. Towards the north and west very close ice was seen, and since the temperature of the air, even with the winds in the southwest, remained constantly below zero, it was evident that the ice must stretch far in that direction also. Aug. 7th, we ran on the white barriers to the west of Admiralty Peninsula, and far to the north, beyond a broad field of ice, refraction indicated open water, and showed the forms of 'Tschorny Nos' floating in the air.

"In the neighborhood of the Pankratjew Islands, a ship suddenly and unexpectedly appeared on the horizon, and endeavored to gain our attention by discharges from a mortar, and by the hoisting of flags. How great was our astonishment and our joy when we beheld the Austro-Hungarian flag at the peak of the *Isbjörn*. Both ships henceforth sailed in company, and without meeting any hindrance in the ice-free coast-water, in a northerly direction. In the forenoon of August 13th, we came upon closer ice, amid mist and stormy weather, and the two ships anchored to some firm land-ice two cable-lengths from each other, about a mile from the land. Close to the south of us lay the Barentz Isles with their singularly formed hills, which the walrus-hunters call by the somewhat gloomy name of 'The Three Coffins.' On our north an enormous iceberg rose in dazzling whiteness above a faintly glimmering field of ice, a harbinger of new countries—for its size forbade us to think that it owed its origin to the glaciers of Novaya Zemlya. Continuous winds from the W.S.W., close ice, mist, downfalls of snow, the necessity of determining the geographical position of the depôt of provisions which we had established, compelled us to lie for eight days before the Barentz Islands. The opportunity we thus had of putting our feet once more on the land was exceedingly agreeable.

"Our involuntary leisure at the Barentz Isles enabled us to make some precautionary preparations for our future contests with the ice; for a ship may be crushed by the ice and sink in a few minutes, as had happened some days previously, not far from us, to the yachts *Valborg* and *Iceland*. Provisions and ammunition for four weeks were got ready, and each man was entrusted with a special service, if it should ever come to this extremity. To guard against the dreaded pressures of the ice, heavy beams were hung round the hull of the vessel, so that the pressure on the ship might be distributed over a larger surface and the vessel itself be raised instead of crushed.

"August 14th, we were threatened by the advance

of an enormous line of pack-ice, which inclosed us in the little 'docks' of the land-ice, and caused the *Isbjörn* to heel over. In the evening a bear came near this vessel, which was shot by Professor Höfer and Captain Kjelsen. On the following day, with the help of the dogs and sledges, we removed over the land-ice to 'The Three Coffins' the provisions which were to form the depôt: 2,000 lbs. of rye-bread in casks, 1,000 lbs. of pease-sausages in tin cases. These were deposited in the crevice of a rock and secured against the depredations of bears. We felt assured of the conscientiousness of Russian or Norwegian fishermen, that they would make use of these provisions only under the pressure of urgent necessity. This depôt was intended to be the first place of refuge, in the event of the ship being lost.

"Both ships were dressed with flags, and round one common table we celebrated the birthday, August 18th, of the Emperor and King, Francis Joseph I. On August 19th we fetched some drift-wood from the land, and saw from a height an 'ice-hole' stretching to the north at no great distance from the coast. As we returned to the ship we came across a bear, which, being assailed by so many hunters at once, took to flight. August 20th, some changes in the ice seemed to make navigation possible, and we forthwith went on board the *Isbjörn* to bid adieu to our friends. It was no common farewell. A separation to those who are themselves separated from the world moves the heart to its depths. But besides this, in bidding adieu to Count Wilczek, we felt how much we were indebted to him, as the man who had fostered the work we were about to undertake, who dreaded no danger while providing for our safety in the event of a catastrophe to the expedition. Our high-minded friend was at this moment the embodiment of our country, which, honoring us with its confidence and trust, demanded that we should devote all our energies to the high objects of the expedition. Often afterwards did this adieu return to our memories. With a fresh wind from the northeast we passed the *Isbjörn* as we steamed towards the north, while this vessel, veiled in mist, soon disappeared from our eyes.

"Our prospects, so far as the object of our expedition was concerned, had meantime not improved. To cross the Frozen Sea to Cape Tscheljuskin in the present year was not to be dreamt of, and yet the thought of wintering in the north of Novaya Zemlya was positively intolerable. The navigable water was becoming narrower every day, and the ice seemed to increase in solidity, especially in the neighborhood of



the coast. In the afternoon of this day we ran into an 'ice-hole,' but in the night barriers of ice stopped

our friends, but a few hours before, saw the *Tegetthoff* steam away to the north, were now crushed; *that we were, in fact, no longer discoverers, but passengers against our will on the ice.* From day to day we hoped for the hour of our deliverance! At first we expected it hourly, then daily, then from week to week; then at the seasons of the year and changes of the weather, then in the chances of new years! *But that hour never came,* yet the light of hope, which supports man in all his sufferings, and raises him above them all, never forsook us, amid all the depressing influence of expectations cherished only to be disappointed.

"Henceforth the *Tegetthoff* drifted in the Novaya Zemlya seas; it was impossible to reach the coast of Siberia, and the search for a winter harbor in the island perilous. The

drift was towards the north, and, on Oct. 2d, they passed the 77° N. Latitude.

"In the first days of October the temperature rose

our further progress. As usual, the ship was made fast to a floe, the steam blown off, and we awaited the parting asunder of the ice. Five walruses that had been watching us from a rock as we entered that ill-starred 'ice-hole,' sprang into the water and disappeared.

"Ominous were the events of that day, for immediately after we had made fast the *Tegetthoff* to that floe, the ice closed in upon us from all sides and we became close prisoners in its grasp. No water was to be seen around us, and *never again were we destined to see our vessel in water.* Happy is it for men that inextinguishable hope enables them to endure all the vicissitudes of fate, which are to test their powers of endurance, and that they can never see, as at a glance, the long series of disappointments in store for them! We must have been filled with despair, had we known that evening that we were henceforward doomed to obey the caprices of the ice, that the ship would never again float on the waters of the sea, that all the expectations with which

considerably, the thermometer standing a little below zero (C.). This was due to southwest winds, and to



THE "TEGETTHOFF" DRIFTING IN PACK-ICE, MARCH, 1873.



ICE PRESSURE IN THE POLAR NIGHT.



the temporary extension of the 'ice-holes' in our immediate neighborhood. The days now became shorter, the sun surrounded with red masses of clouds set behind barriers of blackish-blue ice, and an ever-deepening twilight followed his disappearance. Sept. 29th, a 'snowfinch' flew from the coast of Novaya Zemlya to the ship, hopped about the deck for a little time, and after delighting us all by his little song, again left us. Some few sea-gulls still wended their flight to the spaces of water in our neighborhood. Skimming over the top of the mast, they seemed to gaze down upon us, and then, with a shrill cry, darted away like arrows towards the south. There was something melancholy in this departure of the birds; it seemed as if all creatures were retiring from the long reign of night which was before us. In order to divert our attention from the dreadful monotony of our captivity by some occupation in the open air, we fell on the plan of building houses of ice round the ship. The activity of a building-yard reigned on our ice-floe; heavy ice-tables were broken or sawed through, the dogs in the sledges carried the fragments to their appointed places, and with these blocks we raised crystal walls and towers. Snow, mixed with sea-water, furnished an inexhaustible source of the most excellent mortar; and while we worked laboriously at these meaningless erections, we earned at least by our labor the reward of sleep free from care.

"As we drifted helplessly northward, the coasts of Novaya Zemlya receded gradually from our gaze. Hitherto we had lain close to the land, which, with its rounded mountains and valleys filled with glaciers, seemed a miniature of Alpine scenery. Daily almost the gigantic luminous arcs of parhelia stood above it, the usual precursors of stormy weather or heavy falls of snow. Towards the north and northeast the country becomes flatter, and runs into glacier-wastes little raised above the level of the sea. Though this land was of no value for our object, yet it was still land, and it seemed also to us, drifting as we did, the symbol of the stable and immovable. But now it was gradually disappearing from our eyes. During September we had moved slowly, but with October we drifted at a greater rate, so that by the 12th of this month we saw nothing but a line of heights some thirty miles off, towards the south. At last every trace of land disappeared from our gaze; a hopeless waste received us, in which no man could tell how long we should be, or how far we should penetrate.

"The days were now becoming shorter, and, on Oct. 13th, the floe burst across, immediately under the

ship. Rushing on deck we discovered that we were surrounded and squeezed by the ice; the after-part of the ship was already nipped and pressed, and the rudder, which was the first to encounter its assault, shook and groaned; but as its great weight did not admit of its being shipped, we were content to lash it firmly. We next sprang on the ice, the tossing, tremulous motion of which literally filled the air with noises as of shrieks and howls, and we quickly got on board all the materials which were lying on the floe, and bound the fissures of the ice hastily together by ice-anchors and cables, filling them up with snow, in the hope that frost would complete our work, though we felt that a single heave might shatter our labors. But, just as in the risings of a people the wave of revolt spreads on every side, so now the ice uprose against us. Mountains threateningly reared themselves from out the level fields of ice, and the low groan which issued from its depths grew into a deep, rumbling sound, and at last rose into a furious howl as of myriads of voices. Noise and confusion reigned supreme, and step by step destruction drew nigh in the crashing together of the fields of ice. Our floe was now crushed, and its blocks, piled up into mountains, drove hither and thither. Here they towered fathoms high above the ship, and forced the protecting timbers of massive oak, as if in mockery of their purpose, against the hull of the vessel; there masses of ice fell down as into an abyss under the ship, to be engulfed in the rushing waters, so that the quantity of ice beneath the ship was continually increased, and at last it began to raise her quite above the level of the sea. About 11.30 in the forenoon, according to our usual custom, a portion of the Bible was read on deck, and this day, quite accidentally, the portion read was the history of Joshua; but if in his day the sun stood still, it was more than the ice now showed any inclination to do.

"The terrible commotion going on around us prevented us from seeing anything distinctly. The sky, too, was overcast, the sun's place could only be conjectured. In all haste we began to make ready to abandon the ship, in case it should be crushed, a fate which seemed inevitable, if she were not sufficiently raised through the pressure of the ice. About 12.30 the pressure reached a frightful height, every part of the vessel strained and groaned; the crew, who had been sent down to dine, rushed on deck. The *Tegetthoff* had heeled over on her side, and huge piles of ice threatened to precipitate themselves upon them. But the pressure abated, and the ship righted herself; and about one o'clock, when the danger was in some



degree over, the crew went below to dine. But again a strain was felt through the vessel, everything which hung freely began to oscillate violently, and all hastened on deck, some with the unfinished dinner in their hands, others stuffing it into their pockets. Calmly and silently, amid the loud sounds emitted by the ice in its violent movement, the officers assumed and carried out the special duty which had been assigned to each in the contemplated abandonment of the ship. Lieutenant Weyprecht got ready the boats, Brosch and Orel cleared out the supply of provision

and sizes of it were in active motion, some rearing up, some turning and twisting, none on the level. A sledge would at once have been swallowed up, and in this very circumstance lay the horror of our situation, for, if the ship should sink, whither should we go, even with the smallest stock of provisions?—amid this confusion, how reach the land, thirty miles distant, without the most indispensable necessities?

"The dogs, too, demanded our attention. They had sprung on chests, and stared on the waves of ice as they rose and roared. Every trace of his fox-nature



THE AURORA DURING THE ICE PRESSURE.

to be taken in them; Kepes, our doctor, had an eye to his drugs; the Tyrolese opened the magazine, and got out the rifles and ammunition—I myself attended to the sledges, the tents, and the sacks for sleeping in, and distributed to the crew their fur coats. We now stood ready to start—each with a bundle—whither, no one pretended to know! For not a fragment of the ice around us had remained whole; nowhere could the eye discover a still perfect and uninjured floe to serve as a place of refuge, as a vast floe had before been to the crew of the *Hansa*. Nay, not a block, not a table of ice was at rest, all shapes

had disappeared from 'Sumbu.' His look, at other times so full of cunning, had assumed an expression of timidity and humility, and, unbidden, he offered his paw to all passers by. The Lapland dog, little Pekel, sprang upon me, licked my hand, and looked out on the ice as if he meant to ask me what all this meant. The large Newfoundlands stood motionless, like scared chamois, on the piles of chests.

"About 4 P.M. the pressure moderated; an hour afterwards there was a calm, and with more composure we could now survey our position. The carpenter shovelled away the snow from the deck in order



to inspect the seams. They were still uninjured. The knees and cross-beams still held, and no very great quantity of water was found in the hold. This result we owed solely to the strength of our ship and to her fine lines, which enabled her to rise when nipped and pressed, while her interior, so well laden as to become a solid body, increased her powers of resistance. Everything was again restored to its place, so that it was possible to go up and down the cabin stairs without great difficulty, and in the evening the water in the hold, which had risen 13 inches, was pumped out to its normal depth of 6 inches. We went down into the cabin to rest, but though thankful and joyful for the issue, our minds were clouded with care and anxiety. Henceforth we regarded every noise with suspicious apprehensions, like a population which lives within an area of earthquakes. The long winter nights and their fearful cold were before us; we were drifting into unknown regions, utterly uncertain of the end. When night came, we fell asleep with our clothes on, though our sleep was disturbed every now and then by onsets of the ice, recurring less frequently and in diminished force; but daily—and for *one hundred and thirty days*—we went through the same experiences in greater or lesser measure, almost always in sunless darkness. It was, however, a fortunate circumstance for us that we encountered the first assaults of the ice at a time when we were still able to see; for instead of the calm preparations we were able to make, hurry and confusion would have been inevitable had these assaults surprised us amid the Polar darkness.

The end, however, was not yet. Christmas came and went, and the New Year saw the *Tegetthoff* lying like a white spectre in a mountain of ice. All through the long winter the ship drifted to the North, on gloomy days noon was not distinguishable, and not till February 19th did the sun return to their Lat. 78°, 15'. Thence onward the time crept with indescribable monotony, and the frozen sea still lay like a chaos before them. Spring passed without any movement deserving of record, and summer was well advanced, till on August 30th, as the men were leaning over the bulwarks of the ship, a wall of mist suddenly rising, revealed the outlines of bold rocks. "Land, Land," was the cry of all on board, the ship was decked with flags and the health of Franz Josef drunk joyfully. But it was not till the end of September that any attempt to reach the land could be made, and that was frustrated by a heavy mist. On November 1st land was clearly seen, and a rush over the ice was made and at last the feet of the explorers stepped on a wild-

erness which seemed to them a paradise, and they named it Wilczek Island. On November 6th they reached a point on the northwest, beyond 80° north latitude, whence they could see the mainland, but before it was visited a second winter had to be passed; a winter free from the perils which had harassed them the year before. The winter was again passed on board the *Tegetthoff*, and on February 24th the sun reappeared. On that day the commanders, Weyprecht and Payer, resolved to abandon the ship after the completion of some projected sledge-journeys, and to attempt to return to Europe by boats and sledges. The sledge parties were under the command of Lieutenant Payer, and on March 10th, they left the ship, and, after severe labor in dragging the sledges over the hummocky ice and on the 12th they set up their tent under the dark towers of basalt which stand out before Cape Tegetthoff. The ascent was difficult and the view from the summit limited. On the following day a start was made amid intense cold, which increased till March 14th, proved the coldest day of the expedition. Yet on that day Payer climbed the Sinklar Glazier, and witnessed the sun, rise blood red through the mists and surrounded with parhelia, and then commenced their return to the ship which they reached after an exhausting journey.

"As I entered my berth," Lieutenant Payer writes, "I heard the hard breathing of our poor comrade Krisch. For more than a week he had lain without consciousness; yet death had not come to relieve him. On the afternoon of the 16th of March a sudden cessation of all sound told us that he was no more! Next day, his body, placed in a coffin, was brought on deck, and our flag hoisted half-mast high. On the 19th, when the thermometer was at 13° F., the body was committed to its lonely grave in the far north. A mournful procession left the ship, with a sledge, on which rested the coffin covered with a flag and cross, and wended its way to the nearest elevation on the shore of Wilczek Island. Silently struggling against the drifting snow, we marched on, dragging our burden through desolate reaches of snow, till we arrived, after a journey of an hour and a half, at the point we sought on the island. Here in a fissure between basaltic columns, we deposited his earthly remains, filling up the cavity with stones, which we loosened with much labor, and which the wind as we stood there, covered with wreaths of snow. We read the prayer for the dead over him, who had shared in our sufferings and trials, but who was not destined to return home with us with the news of our success; and close by the spot, surrounded with every symbol



of death and far from the haunts of men, we raised as our farewell a simple wooden cross."

The second sledge journey was based on the experiences acquired in the first one, just described. It was determined to make it one of a month's duration, and directed to the north.

Before we started, there was an interesting interruption in the monotony of our lives, occasioned by a family of bears. While we were absent in our first journey a bear had been shot from the ship, and little Pekel had been wounded in the neck. On the 19th

forty paces, fell dead. Amazed at the reports of the rifles and the actions of their mother, the little bears sat as if they were rooted in the snow, and looked with astonishment at the dark forms which rushed out from the ship. One of them suffered itself to be shaken by Pekel; and only when they were seized by the nape of the neck and carried on board did they seem to entertain the least surmise of mischief. At first they were shut up separately in casks set on their end, and growled long and impatiently till they were put together in the same cask. Sumbu alone was



THE FIRST ABANDONMENT OF THE "TEGETTHOFF."

of March another bear came close to us, which was scared away after some unsuccessful shots had been fired at it. Three days afterwards a she-bear appeared accompanied by her two cubs, of a darker color than their mother, rolling on after her. It was exceedingly interesting to watch the actions of this family. The mother frequently stopped and snuffed the air with uplifted snout; then she would lick her cubs, who fondly crept up to their mother, behaving exactly like young poodles, which they also resembled in size. Six shots were fired at seventy paces distance, and the mother-bear, after running for about

slow to understand our suddenly-excited pity for his hereditary foes, and scratched and barked at the cask for hours together, while the cubs growled and threatened retaliation with their little paws. After looking at this for some time, Gillis was moved to side with the bears, and a battle ensued between him and Sumbu, in which the latter got the worst of it. The little animals afforded us much amusement, and the crew were seriously considering the feasibility of training them to draw in the sledge, in the meditated return expedition to Europe. They ate bread, sauerkraut, bacon—in short, everything that was given



them. One morning, however, the little rascals eluded the eye of the watch and got away. They were immediately caught and killed, and appeared roasted on our dinner-table.

"On the 25th of March our preparations for the extended journey northwards were brought to an end. The sledge with its load weighed about 14 cwt.

"We started on the morning of the 26th of March with the thermometer 6° F. below zero, and amid snow driving from the northwest. For some distance we were accompanied by Weyprecht and the rest of the crew. We had scarcely gone a thousand paces from the ship, before the snow began to drive to such an extent, that we could scarcely see our comrades close to us and keep together. As it was impossible to go on until the storm laid, we preferred, instead of returning to the *Tegetthoff*, which would have been the simpler course, to erect the tent out of sight of the ship behind some ice-hummocks, and pass twenty-four hours in it. Our only employment except sleeping was to thaw the snow, which filled our clothes and especially our pockets. After passing the headland of Salen Island, we saw at a distance ahead, several rocky islands, and on March 29th ascended Koldewez Island.

"From the summit of this island we suddenly beheld, in the field of view of the telescope of the theodolite, a bear, which had seized one of our men and severely wounded him. But almost immediately again the bear disappeared in the snow, and when we came to the place of his disappearance, we discovered the winter retreat of a family of bears. It was a cavity hollowed out in a mass of snow lying under a rocky wall. The bear had shown herself only once, but resisted all our efforts to seduce her to leave the shelter she had chosen, nor had we any special desire to creep on all fours into the narrow dark habitation. Sumbu only was bold enough to follow her, but he too saw things which led him to return very quickly. From the snow which had been thrown up at the entrance of this hole, we inferred that this had been the work of the bear in her efforts to close the approach to her abode. It was the first time that we came upon a family of bears in their winter quarters, or had the chance of adding anything to our scanty knowledge as to the winter sleep of those animals.

"As we advanced the temperature fell and a strong northwest wind prevented further progress. There was nothing for it therefore but to set up the tent again and to get back into our sleeping-bag. But the damp tent was frozen hard, and we felt much as if we were lying between two plates of cold metal.

It would be difficult to say whether we suffered more from cold than from vexation. Zaninovich spread the sail over us, and shovelled down the snow from the walls of the tent. Who could be so serviceable as this comrade of ours, who on every occasion displayed such hardihood against cold? Orel and I made vain attempts to shorten the time by reading a volume of Lessing which we had brought with us; but we soon renounced the effort, finding that we could not fix our attention in such a situation. We had some compensation, however, in the amusement of listening to the Dalmatians learning to speak German with Klotz, who was far from the weakness of uttering a single word in Italian. As usual, when the weather was bad, the dogs gathered close to the wind-sheltered side of our tent. Sumbu, forcing himself in among us, had to be driven out, for he growled if he had the faintest suspicion that we meant to move or to smoke; but failing to make himself comfortable among the other dogs, he avenged himself by again rushing in among us, shaking the snow from his coat, and forced us to admit him.

"Poor Sumbu met a sad fate not many days after. A gull flew over his head, and Sumbu burst away from the sledge. In hot pursuit of the bird he disappeared from our sight and never returned again. All our shouts were thrown away. Our track was soon covered over by the drifting snow, and there cannot be a doubt that our faithful companion, after wandering about for days, either died of hunger or fell a victim to a bear. During our march, spying us at a great distance, a bear approached us at a rapid pace, but when he came within forty paces he fell, receiving three bullets in his head.

"As we approached the promontory on the south of Rudolf Land we came upon innumerable icebergs, and crossed the Middendorf Glacier.

"By and by we came to more snow, and the ice, through which many fissures ran, became gradually thinner; but when we reached the imposing headland, which we called Cape Auk, the ice lay in forced-up barriers. A strange change had come over the aspect of nature. A dark water-sky appeared in the north, and heavy mists rolled down to the steep promontories of Karl Alexander Land; the temperature rose to 10° F., our track became moist, the snow-drifts collapsed under us with a loud noise, and if we had previously been surprised with the flight of birds from the north, we now found all the rocky precipices of Rudolf's Land covered with thousands of auks and divers. Enormous flocks of birds flew up and filled



the air, and the whole region seemed alive with their incessant whirring. We met everywhere with traces of bears and foxes. Seals lay on the ice, but sprang into the water before we got within shot of them. But notwithstanding these signs of a richer animal life, we should not be justified in inferring, from what we saw in a single locality, that life increases as we move northwards. It was a venial exaggeration, if amid such impressions we pronounced for the nearness of an open Polar sea, and, without doubt, all adherents of this opinion, had they come with us to

land was no longer visible towards the north. The 12th of April was the last day of the advance northward, and on Cape Fligely we proudly hoisted the Austro-Hungarian flag, for the first time, in the high north. The following document we inclosed in a bottle, and deposited it in a cleft of rock:

"Some members of the Austro-Hungarian North Pole Expedition have here reached their highest point in  $82.5^{\circ}$  N. L., after a march of seventeen days from the ship, lying inclosed in ice in  $79^{\circ} 51'$  N. L. They observed open water of no great extent along



DEPARTURE OF THE SUN IN THE SECOND WINTER.

this point and no further, would have found in these signs fresh grounds to support their belief. In enumerating these observations, I am conscious what attractions they must have for every one who still leans to the opinion that an open ocean will be found at the Pole; subsequent experience, however, will show how little is their value in support of this antiquated hypothesis.

"Passing Cape Auk we saw ahead of us two rock towers, which we named Cape L'Oùler, or the Cape of Columns. Close under it we came upon the steep edge of the glaciers, and, on ascending the heights,

the coast, bordered by ice, reaching in a north and northwesterly direction to masses of land, whose mean distance from this highest point might be from sixty to seventy miles, but whose connection it was impossible to determine. After their return to the ship, it is the intention of the whole crew to leave this land and return home. The hopeless condition of the ship and the numerous cases of sickness constrain them to this step.'

"The ship was 160 miles distant; but where was she? Had she drifted, or remained stationary? The journey was an arduous one, and when nearly two-



thirds of the journey was over, we saw the sea ahead of us, and no white edge beyond. Walls of forced-up ice surrounded this water, which, stirred by a heavy wind, threw up crested waves; the spray of its surf dashed itself for a distance of thirty yards over the icy shore. Forthwith ascending an iceberg, we looked over the dark waste of water, in which the icebergs, under which we had passed a month before, were now floating; the more distant of them stood out against the arch of light on the horizon, and those nearer to us shone with a dazzling brilliancy under the dark water-sky. That on which lay our depôt of provisions was floating in the midst of them; and here we were, without a boat, almost without provisions, and fifty-five miles distant from the ship! A strong current was running southwards at the rate of three or four miles an hour; fragments of ice were driving before the wind, as if they meant to delight us by their movements, and as if there were no change for the worse to a handful of men, who stood in reality before an impassable abyss.

"Soon everything was veiled in mist, and then came driving snow, and it was with great difficulty that we could drag our sledges onward. On April 22d, we reached Schonan Island, and continued our route close under Koldewez Island, while the lofty pinnacle of Cape Berghaus stood out sharply against the sky. The passage between Solen and Wilczek Island was soon reached, and there, at a distance of three miles, lay the ship.

"On May 20th it was resolved to abandon the *Tegetthoff*. Yet we could not see without emotion the flags nailed to the masts of the *Tegetthoff*, and the final preparations to leave the ship, which had been our home for two weary years, and in which we had confronted the perils of the frozen sea, its ice-pressures, its storms, and its cold. These recollections crowded upon us as the moment came to abandon her. Now, too, we had to part with our zoölogical, botanical, and geological collections, the result of so much labor; the ample collection of instruments, the books which had helped us over many a weary hour, and the sixty-seven bear-skins which we had so carefully prepared—all these had also to be abandoned. The photographs of friends and acquaintances we hung on the rocky walls ashore, preferring to leave them there rather than in the ship, which must some time or other be driven ashore and go to pieces. A document stating the grounds of our decision was laid on the table of the mess-room.

"Three boats were selected for the return expedition, to each of which a large sledge was attached.

The first day's work for twenty-three men, harnessed to boat or sledge, was the advance of one mile, but often we only progressed half a mile, as each portion of the track had to be passed over three times, three times heavily laden, twice empty. On the 28th an ice-hole was reached, but it was not till the 19th of June that the boats were launched. Payer's diary reads:

"June 30.—A small 'ice-hole,' and then a large ice-field were crossed, and as we were in the act of passing over a lead filled with broken ice, it suddenly closed, and we had to draw our boats up again, and to wait till the ice should part asunder. The snow has become quite soft, and we find water at the bottom of a hole, and employ it for the first time for cooking. The dogs to-day drew 12 cwt., and are quite exhausted. I had my hair cut by Klotz, and, with many apologies for my poverty, offered him some water in compensation—an offer he declined. In the Arctic Seas, even to the doctor, a glass of water is a handsome fee.'

"So it runs on for weeks together in my journal; and if it be tiresome for readers to follow such repetitions, how much more wearisome must it have been to live through and experience them! Yet if it were possible for our situation to become worse, it did so during the first half of the following month. One of the scenes that occurred almost daily was pushing the floes assunder with long poles, in order that the boat might pass between them, while the rotary motion of the floe closes the fissure in the foreground, so that another boat has to be drawn on the ice as quickly as possible.

"It sometimes happened that we could not push the floes asunder, and we were then compelled to cross them; and in those cases where the floes were a mile or more in diameter, our progress took the form of sledging. The provision was sent on for some distance to the nearest water, and the boats, which remained behind under the care of the less able-bodied of our party, were lifted on to the sledge by the rest of the crew when it returned, and firmly secured. The smallest of our boats was shoved through the snow while the dogs with their sledge transported the bags of bread and the spirit.

"So onward the explorers toiled, their only excitement being the chase of a bear, and for days together, their only distraction being the calking of the boats.

"About six o'clock in the evening we had reached the extreme edge of the ice-barrier, and once more, but for the last time, drew our boats on a floe. Again our ears heard the noise of the waves—the voice of





ABANDONING THE "TEGETTHOFF."



life to us. Again we saw the white foam of the surge, and felt as if we had awoke from a death-like slumber of years to a new existence. But if our joy at deliverance was great, not less great was our astonishment to have reached the ice-barrier in the high latitude of  $70^{\circ} 40'$ , and with it the hope of final escape. We went to rest for some hours, but were roused by the watch about two o'clock in the morning. The east wind had gathered some heavy masses of ice around us, which rose and fell with the swell of the ocean, and we were already several hundred yards from the water's edge. Any delay in escaping as quickly as possible would require the labors of many days to 'set us free again. After much shoving with the poles, and lading and unlading, we again got beyond the line of ice. The frozen ocean lay behind us, and on our last floe we made preparations for our voyage on the open sea.

"Yet a boat voyage on the Arctic Seas is no holiday affair, the coast was usually inaccessible, no ship was seen in the Matoschin Straits, and the only hope was to press onward to the Bay of Danes on the chance of finding a ship there. But the hour of our deliverance was nearer than we thought. It was evening as we glided past the black, weather-worn rocks of Cape Britwin, the ledges of which were covered with flocks of birds, revelling in the spray of the surf. Then about seven o'clock a cry of joy as from one voice arose from the boats. A fifth small boat with two men in it lay before us, apparently engaged in bird catching. They pulled towards us, not less amazed than we ourselves were, and before either party could explain itself, we turned a corner of the rock—there lay two ships. It is with a certain kind of awe and reverence that a shipwrecked man approaches a ship, whose slender build is to deliver him from the capricious power of the elements. To him it is no lifeless machine, but a friend in need, yea, a higher creation than himself. Such were our feelings as we neared the two schooners which lay a few hundred yards off in a rock-encircled bay. To us at that moment these vessels were the sum total of the whole world! Dressing our boats with flags, we followed the strangers in their boat, and made fast to the schooner *Nikolai*, whose deck was in a moment crowded with bearded Russians, who stared at us with mingled feelings of wonder and sympathy, and whose captain,

Feodor Voronin, stood like a patriarch among them to welcome us.

"No grandees could have been received with more dignity than we were. At the sight of the two Ukases, which we had received from St. Petersburg, and which required all inhabitants of the Russian Empire to furnish us with all the help we needed, these humble seamen bared their heads, and bowed themselves to the earth. We had an example before us to show how orders are obeyed by the subjects of that Empire a thousand miles from the place where they were issued. But we were received not only in this reverential manner, but were welcomed with the greatest heartiness, and the best of everything on board was spread before us.

"Since we abandoned the *Tegetthoff*, we had passed ninety-six days in the open air, and, including the sledge journeys which preceded the abandonment of the ship, about five months. The impressions of a return to life were felt by us with silent yet deep thankfulness of heart.

"The ships we found in 'Dunen Bai'—the Bay of Dunes—came from Archangel, and were engaged in the salmon fishery, at the mouth of the Puhova River. They had taken very little, and their purpose was to remain where we found them for fourteen days longer, and to spend about the same number in fishing and hunting at the southern extremity of Novaya Zemlya. This programme was not exactly to our taste. To spend a month in a fishing-vessel, just as we awoke to the remembrance of all the comforts and pleasures there are in the world, to sleep in the hold where cholera lurked among bear and reindeer hides, amid heaps of salmon and reindeer flesh, among nets and oil casks—such a prospect was not to be thought of. Accordingly, we agreed with Captain Voronin that he should leave off his fishing and take us without delay to Vardö, in Norway, that we should give him in return for his services three of our boats, two Lefauchur rifles, and guarantee him the further compensation of 1,200 silver roubles."

On the 3d of September, 812 days after the *Tegetthoff* had left Bremerhaven, the returning explorers sighted the little harbor of Vardö, and on the 5th the mail steamer from Vardö to Hamburg took them on board, and the Austrian Polar expedition was at an end.



## CHAPTER XIII.

## NORTHEAST PASSAGE—THE "VEGA"—1878-1879.



AFTER the English expedition of 1676 there occurs an interval of nearly 200 years without any endeavor to make the Northeast passage. The country that now took up the great question was Austria, which, in 1872, sent out an expedition subsidized by private individuals. The ship bore the name of *Admiral Tegetthoff*, and was commanded by Lieutenant Weytprecht, who was accompanied by Lieutenant Payer, as leader of all land excursions. Of the vessel's

being frozen in on the west coast of Novaya Zemlia, of its wonderful drifting with the ice and consequent discovery of a new land, and of the crew's fortunate escape, it is not necessary here to speak. The attempt made by this expedition to reach the North-east passage proved unsuccessful, inasmuch as it gained no point farther than its predecessors with the same object.

A more fortunate issue has been reserved for the thirteenth expedition organized to circumnavigate the north coast of Asia—the Swedish Arctic Expedition of 1878. Of its equipment and voyage, I will now give some account. When Professor A. E. Nordenskiöld, during the years 1875-76, crossed without difficulty the Kara Sea which had hitherto been regarded as unnavigable, and penetrated to the mouth of the Yenisei River which in the former year he sailed up returning home overland by Siberia, it occurred to him that, with a good steamer, one could sail still farther east along the north coast of Siberia to Behring Strait. In the programme which Professor Nordenskiöld drew out for the promotion of an

expedition with the object of sailing through the Northeast Passage, he mentions as ground for the possibility of such a voyage, among other reasons, that the warm current which is formed by Siberia's many and powerful rivers, and the direction of which, by reason of the earth's revolution, ought to be from west to east, would be so strong, and would so beat up the water lying nearest the coast that a navigable stream must be found there during the late summer months—namely, August and September. This opinion proved perfectly correct. Supported by the results of the successful voyages of 1875-76, and the opinion just mentioned, Professor Nordenskiöld succeeded in interesting his Majesty, the King of Sweden, Mr. Oscar Dickson, merchant, and Mr. Alexander Sebirckoff, a Russian mine-owner, in his project. They undertook to defray the expenses of the expedition. Afterwards aid was obtained also from the Swedish Government, who liberally allowed \$7,500 for the repairing of the ship to be used by the expedition, and permitted the work to be executed at the Royal Dockyards at Carlsrona.

The steamship *Vega* was bought for the expedition from a Swedish Sealing Company for the sum of \$42,500. The *Vega* was a bark-rigged steamer, built in 1872 for seal and whale fishing in the Arctic seas, and, consequently, the exigencies of ice navigation had been duly considered in her construction. The vessel was 500 tons burthen, and its dimensions were: Extreme length, 150 feet; breadth, 29 feet; depth of hold, 16 feet. It was provided with an engine of 60 horse-power, on Woolf's principle, which gives the vessel a speed of seven knots, with a coal consumpt of three cwt. per hour. The *Vega* which was not permitted to carry the royal flag sailed during the whole expedition under the flag of the Royal Swedish Yacht Club.

After having undergone considerable reparation of masts, sails, hull, and machinery, at the Royal Dockyards, the *Vega* left Carlsrona on the 22d of June, 1878. The ship's company was made up of the following officers, commissioned and non-commissioned,



and men on leave of absence from the Royal Navy: Lieutenant Palander, commander; Lieutenant E. Brusewitz, F. A. Pettersson, engineer; R. Nilsson, sailingmaster; three firemen, of whom one acted as



A. E. NORDENSKIÖLD.

second engineer; four able seamen, and four ordinary seamen; seven boatmen; one carpenter. Besides the crew, the *Vega* was accompanied from Carls-crona by Lieutenants A. Hovgaard and G. Bove, belonging respectively to the Danish and Italian navies—the former the physiographer of the expedition, the latter its hydrographer. Both of these officers had been residing at Carls-crona to be present at the equipment of the ship. From Carls-crona she went to Copenhagen, from whence almost all the supplies estimated for thirty men for twenty-four months were taken in. In provisioning the ship special care was paid to the regimen which must be followed during an Arctic voyage; consequently the supplies consisted chiefly of preserved foods. In the choice of provisions, care was taken to obtain everything of the best quality. Among other articles of supply taken to avert the pest of the Arctic region, scurvy, may be mentioned—lime juice, pickled cabbage, concentrated rum, pickles, preserved vegetables, mulberry-jam, dried fruit, and preserved cream. After some days' stay at Copenhagen, necessary for the shipment and stowage of the supplies, the explorers left there on the 26th of June, and arrived at

Gothenburg on the following day. At Gothenburg, the following gentlemen embarked: F. R. Kjellman, botanist, Fellow of Upsala University; Dr. A. Stuxberg, zoologist; O. Nordqvist, lieutenant in the Russian army, interpreter and zoologist; Dr. S. Almgvist, medical officer of the expedition, and a personal attendant for Professor Nordenskiöld. Provision and coal supply were completed here; and also they shipped the scientific equipment, sledges, and pemmican for sledge journeys, and two collie dogs, bought in Scotland.

On the afternoon of the 4th July they left Gothenburg, not again to see the dear shores of their native land for nearly two years. A stiff, contrary wind delayed the voyage to the next place of destination, Tromsø, where they did not arrive until July 17th. Here embarked the leader of the expedition, Professor Nordenskiöld, and three Norwegian fishermen.

The number was now complete and made thirty men all told, comprising nine officers and scientists, three non-commissioned officers, and eighteen of a crew. In Tromsø a full supply of water and coals was taken in; also a parcel of furs and sundry other



A. E. NORDENSKIÖLD (*last voyage*).



articles. At their departure from Tromsøe the coal supply consisted of nearly 225 tons. At the lowest reckoning with deduction of fuel for galley and stores it was estimated that the *Vega* could, solely with the assistance of her engine, make more than 4,000 miles, which nearly corresponded to the distance between Tromsøe and Behring Strait. From private sources the crew had been provided with under-vests, drawers, stockings (long and short), and mitts of wool, sail-cloth boots, fur mitts, fur caps, hoods, and snow spectacles, etc. The captain writes:

On the 21st of July we steamed out of Tromsøe harbor, accompanied by the steamer *Lena*, which was to go with us to the mouth of the river Lena, proceed up that river to Yakutsk, and thereafter be employed in the conveyance of passengers and goods. After having been compelled by severe storm to take refuge for three days in a bay near North Cape, we ultimately got out to sea on the 25th of July. A pretty stiff breeze, with heavy sea, soon brought about our separation from our lesser companion the *Lena*; and we did not again see her until the 31st of July, the day after we anchored at our rendezvous, Yugorschar, the sound lying between Waigatz Island (south of Novaya Zemlia) and the mainland. At Yugorschar we also met other two vessels, the steamer *Fraser* and the bark *Express*, which, through Prof. Norden-skiöld, had been chartered for account of Herr Sibirskoff, to load a cargo of grain and tallow at the mouth of the Yenisei. At Yugorschar there is a village of which the inhabitants are partly Samoiedes, partly Russian. The Samoiedes there settled were Christians, spoke pretty fair Russian, and had a church of their own, although it was little better or larger than a very small and poor wooden hovel. They are a people of very small stature, with broad faces, prominent cheek-bones, yellow complexion, oblique eyes, and flat noses. Their costume is much like that worn by the Lapps. They live on what they catch of seals and fish. The Russians in the village remain there only during summer, during which season they fish and barter goods with the Samoiedes, returning in the autumn to the interior of Russia. They usually have their homes in Petchora or that district.

On the 1st of August, with beautiful weather, all four vessels (the *Express* in tow of the *Fraser*) left their anchorage at Yugorschar and were soon in the Kara Sea, which was then completely free from ice as far as the eye could reach. At the entrance into the Kara Sea the scientific work of the expedition began. From that day were instituted complete meteorological observations, dredging, sounding,

investigations of the temperature, and of the specific gravity of the water at different depths. Early on the morning of August 3d they met the first drift-ice, which was, however, of such a description as could be easily passed through. With the object of avoiding contact with more compact and stronger ice, they steered down towards the coast of the Samoiede Peninsula, which was followed as close as the shallow water permitted. The land, which is properly only a sandbank cast up by the powerful river Obi, could not be seen, although the atmosphere was quite clear. They met here only spread and easily navigable drift-ice.

The *Lena*, with Hovgaard, Almqvist and Nordqvist on board, was sent off to investigate the sound lying between the peninsula and White Island, but found it impossible on account of the numerous sandbanks, to go through it. As a result of very nasty weather, and the poverty of the land in animal and vegetable life, the harvest reaped by the scientific party on this occasion was somewhat meagre.

On the 4th of August they rounded the point of White Island in water entirely free from ice. Here they met a stiff breeze from the north, which, in conjunction with a high cross sea in three or four fathoms of water, was anything but agreeable, particularly as no trustworthy chart of these regions is yet to be had. The water was of a brown color, precisely similar to that of many of the rivers in Sweden. Danger of stranding, however, does not exist, even although one should happen to be near the flat shores of the White Island during a storm, because the powerful current from the confluence of the Obi and Yenisei rivers in the neighborhood of the above island sets north during the summer season with a velocity of three to five knots.

On the 6th of August we anchored beside one of the group of islands which lie outside Dickson's Harbor. Two hours later the *Express* and the *Fraser* anchored near us. In the afternoon, after the course had been examined by the steam-launch, we went further in, and anchored in the harbor, which is well protected by land on all sides. The following day, the *Lena* arrived from its exploring expedition. Both in Yugorschar and Dickson's Harbor, the *Lena*, as well as the *Vega*, took coal supplies from the *Express*, which had carried about 400 tons of coal from London instead of ballast. By these vessels letters and telegrams were despatched to be further transmitted from Norway.

On the 9th of August the *Express* left us in tow of the *Fraser*, and steered for the Arctic Sea. The



course was set for the Kammen Islands, with the intention of afterwards following the coast of Taimyr Land to Taimyr Island. Already, during the first day, we met several small islands, which, according to the chart we had, should have lain sixty miles further east.

This was not the last time we made the discovery that the coast was described in this chart as much further east than it in reality is. This was particularly noticeable when we reached the other side of Cape Tchelyuskin, where, according to the map, we sailed over long stretches of land. The map which we used as a chart had been constructed by the Russian General Staff, and was founded upon old delineations from the seventeenth and eighteenth centuries. We found the coast correctly delineated for the first time from the other side of Kolyma River to Kolintchin Bay. That portion had been described by Admiral von Wrangel as recently as 1821-23. The map was, besides, more a land than a sea chart. The depth was indicated in very few instances, and these were usually at fault. It was necessary, therefore, to proceed with the utmost caution. Our regulations were to sound every hour as long as we were in deep water—that is to say, as long as the depth was not less than seven to ten fathoms. At a less depth we sounded every quarter of an hour; and often, in from three to four fathoms of water or even less, the land line was constantly employed for days in succession. As soon as the depth decreased to about four fathoms, the steam launch, which was always kept with steam up, was put out and sent before the *Vega*. This could be easily done in water free from ice, or in spread drift-ice; but when the ice was so compact that the *Vega* had to force a passage through, the steam launch, of course, could not be used. Only upon one occasion, when we stood eastward from Cape Tchelyuskin, we sounded and found seventy fathoms; at no other place, even when far out at sea, had we more than twenty fathoms, and as soon as we neared the coast the depth gradually decreased to three or four fathoms and under. Usually we sailed in a depth of from five to seven fathoms.

On the 11th of August we anchored near an unknown island to await better weather, there being a storm of wind and rain right in our teeth. On the afternoon of the same day when the wind had somewhat moderated, we continued our voyage.

On the 12th we encountered drift-ice, but so spread that without too many deviations we contrived to go forward in a northeasterly direction. The ice now

began to be accompanied by fog, which, in the Arctic waters, is more dense than anywhere else in the world. As long as there is drift-ice in the neighborhood, so long can one almost calculate with certainty upon having an impenetrable fog; which only lifts for a few hours during the day, usually immediately after noon or early in the morning. Often when the fog disperses at midday, there is brilliant sunshine, and one discovers that the course taken in the drift-ice during the fog is wrong, and there is nothing for it but to return the same way and begin to push forward anew by another and better route. The fog rises and falls very suddenly without any premonitory signs, and might be compared to a stage-curtain, which is alternately raised and dropped.

On the 13th of August, during a dense fog, we found ourselves close upon land right ahead of us, as well as upon both sides. Fortunately we were proceeding with such caution, that by backing we could come to a standstill before we had run ashore. We anchored, and when the atmosphere cleared somewhat for a few moments, we found that the land beside which we had anchored was simply an isolated heap of stones of a C form lying out in the sea. For the remainder of the 13th and part of the 14th, we lay in compact drift-ice and fog, unable to make any advance. On the evening of the 14th we were favored with a few hours clear weather, and managed to make a little progress landward, where the ice appeared thinnest. As our scientific party wished to go ashore for the purpose of collecting, we anchored in a bay on the southwest of Taimyr Island. The bay was named Actinia Harbor, on account of the vast numbers of Actinia (or sea-anemones) which were found on the bottom. Here we were detained three and a half days by a dense fog. During that time, with the aid of the steam-launch, there were several excursions made to investigate the sound lying between Taimyr Island and the mainland, which at its western mouth was so shallow, narrow, and rocky, that the *Vega* could not pass through it. The current here always runs westward with a speed of three to five knots.

On the morning of the 18th of August the fog rose so far as to permit us to go to sea. The course was taken north to Taimyr Island between some reefs covered with boulders, which were now and then discernible through the rapidly returning fog. During the night, after having passed through a great deal of drift-ice, and seeing at a distance several large islands lying northwards, we sighted the land south of Cape Tchelyuskin. The land lay con-



siderably farther west than as delineated on the chart. On the afternoon of the 19th of August we doubled the Old World's most northerly point, Cape Tchelyuskin, the *Vega* being the first vessel which has succeeded in so doing. At 6 P. M. we anchored in a creek on the eastern side of the above cape. The national flag was hoisted, a salute given; while on the shore stood a large polar bear to bid us welcome. That night and the following forenoon were employed in deciding the position of the cape (which was found to be Lat. N.  $77^{\circ} 36'$ , Long. E.  $103^{\circ} 25'$ ), and in making various scientific investigations. At 1 P. M. on the 20th of August we raised our anchor and steered in a northeasterly and easterly direction as far as the ice permitted. We now no longer followed the coast our intention being to see if we might not possibly discover farther out some hitherto unknown islands or continents. But by the 22d we were so entangled in compact drift-ice, that during the fog which prevailed we found the utmost difficulty in finding our way back to the coast. To penetrate farther east in this latitude was then impossible.

On the morning of the 24th we were again near land, and found there a channel from three to five miles broad, and almost quite free from ice. We sailed along the coast in this stream almost directly south, in a depth of eight to fifteen fathoms. In contrast with the other parts of the north coast of Siberia, which almost everywhere is low, with a gradual elevation landwards there is here a high mountain chain with remarkably beautiful snow-clad peaks, the height of which we estimated at 2,000 feet.

On the same afternoon we anchored at Khatanga Island, at the mouth of the bay of the same name. How incorrectly this bay has been described may be learned from the maps. Khatanga Island had a very singular appearance. The northern side was about 250 feet high, and descended perpendicularly into the sea. From the northern summit the island sloped gradually away to the south, where its shores were finally lost in a sand bank, which stretched far out into Khatanga Bay. The island was about one mile east to west, and one and a half miles from north to south. On its western side there is a very good anchorage, only protected, however, from the winds between N.E. and S.E. Its northern shore was quite covered with puffins and other species of birds, among which our guns made great destruction. Two polar bears were also shot here. At 9 P.M. we raised our anchor, and steered under alternate fog and clear weather for the northeast of the bay. The light nights were at an end, and it was now extremely

dark about 10 P.M. On the 25th of August, following the coast we passed the North Bay, and then took our course eastward in four to eight fathoms of water. In the early morning of that day, which was a Sunday, there was a dense fog; but about 10 A.M. it completely dispersed, and the day became the warmest and most beautiful we had during our whole voyage along the coast of Siberia. The thermometer showed as high  $47^{\circ}$  C. in the shade.

After we had passed the North Bay, the want of depth compelled us to go so far out to sea that we could barely keep sight of land. There we met with many *torosser* aground. *Toross* is the Russian designation for walls formed during the winter by the constant forcing up of the ice. They sometimes reach the height of one hundred feet, and consist of ice blocks cast one upon the other—the whole not unlike a heap of gigantic sugar loaves lying topsy-turvy. These *torosser*, should they be of large dimensions, are not acted upon by the summer sun, but remain, and certainly constitute a good beacon for seamen to avoid the ground upon which they rest.

On the 24th of August we continued to follow the coast in an easterly direction in a depth of from six to eight fathoms, pursued by our old enemy, the fog. In the evening, at dusk, we sighted a long, narrow sand-bank, which rose only a few feet above the level of the sea. We steered southwards towards land, with the intention of sailing round its southern extremity; but after following the edge of the bank for about six hours, and as it then appeared to run quite up to the land, we turned and stood out towards the north. This sand-bank, which at high water, or during darkness, is extremely dangerous for the navigation, lies about twenty-five miles from the delta at the mouth of the Lena; and its southern extremity is probably connected with Olensk Land. It lies north and south, and is probably cast up by the river Olensk and the western arm of the Lena.

After having gone round the sandbank, we proceeded on our voyage, steering eastwards for the Lena's most northerly mouth. At this point a pilot from Yakutsk was to meet us to take the steamer *Lena* up the river to that town.

As the river Lena has numerous mouths in its northern delta it had been prearranged that the pilot who, during the whole of the navigable season, must be found at the place, should set a sea-mark at that mouth where the greatest depth was obtainable. Our intention was to accompany the *Lena* to the mouth of the river, and remain there for a few days for scientific research. But on the night of the 27th of August,



when we were outside our proposed anchorage, we found navigable water and a favorable wind. The opportunity was too good to be allowed to slip out of our hands. In the utmost haste we closed our letters and telegrams to our friends at home, and sent them on board the *Lena*. She was now left to her own devices to prosecute her journey to her place of destination. We spread our canvas, and making good speed, proceeded eastward to work out our way alone through the remaining portion of the Northeast passage. Our lesser companion had proved most useful to us, as, whenever the water became shallow, she preceded us, and took soundings. On the 26th of August we were again among close but nevertheless navigable drift ice. At midday we sighted Wasilieffski Island, on our starboard bow, which we ought to have had on our other side far to the north. We had then not taken observations since the 26th.

During that interval of forty-eight hours the current from the rivers Lena and Yana had carried us 70 miles to the north. We went to the south side of Wasilieffski Island, from which there stretched out in a southerly direction a sandbank so low that it was only at a distance of eight miles from the island that we managed to pass it in a depth of eighteen feet. This proves the validity of the general rule that all islands north of Siberia are extremely flat on the southern side, but contrariwise, precipitous and deep on the northern, on which side they can usually be passed at a distance of a few hundred feet. As Professor Nordenskiöld wished to land on Liakov Island, the most southerly of the New Siberian group, to collect mammoth and other possible remains, the course was set for that island's western shore. On the 29th we had such exceedingly hard work among close drift-ice, that it was only with the utmost difficulty we could go forward at all. Ultimately we succeeded in forcing our way through, and passed to the north of Stolbovoi Island, on the eastern side of which we found completely clear water for about ten miles. Here the log was heaved, and it was found that the *Vega*, using her sails alone, and with a favorable wind, was going at the rate of eleven knots an hour. This was the greatest speed attained during our voyage along the Siberian coast. The following morning we stood in toward Liakov Island, to which, in consequence of the shallows, we could make no nearer approach than at four to five miles distance; and these shallows, in conjunction with an impending fog, made it impossible to go ashore. We therefore steered southward for Cape Sviatoi, the point of which we doubled, after much

trouble with the ice, in the night between 30th and 31st of August. From thence we had two days of exceedingly good weather, during which we sailed along by the coast in water all but quite free from ice. We required, however, to keep some little distance out, as the water was shallow. The coast here was very flat, and almost invisible to us on account of the fog.

On the night between the 2d and 3d of September the drift-ice closed up; the temperature, which had hitherto in general kept above zero, now fell below, and we had our first real snowfall. On the 3d of September, during the day in a snowstorm, we rounded the point lying northeast of the mouth of Kolyma River. The coast here was somewhat high and mountainous. We sailed at some cables length distance from the coast, and, with alternate snowstorms and clear weather, passed between the Bear Islands. On the most easterly of these there stands four pillars, which, like so many beacons, spring erect above the land. These pillars which are composed of some plutonic mineral are, according to Baron von Wrangel, forty feet high. After passing the Bear Islands, and proceeding in an easterly direction among very compact drift-ice, during the night we steered northeast, with the hope of reaching that portion of land as yet untrodden by the foot of civilized man. Known as Wrangel Land also sometimes called Kellet Land. The Americans and Russians have called this land after Admiral von Wrangel, who, during his three years' stay (1821-23) on the Siberian coast of the Arctic Sea, made two fruitless attempts to reach (its existence being already known to the Tchuktchis) from Kolyma, by means of dog-sledges.

The natives of Cape Yakan and North Cape had repeatedly in very clear weather, most probably under peculiar atmospheric conditions, seen land in the northeast; this suggested to Admiral von Wrangel (who was sent out by the Russian Government to survey the Siberian coast) an endeavor to reach that land. Wrangel was met either by an impassable barrier of ice (hightorossoer) or by ice-fields here and there rent asunder, with large fissures between the latter called by the Russians *polynjor*. The result was that he had to return without arriving at or even seeing the land in question. As the natives relate that for some time past they have seen during the winter people unknown to them coming over the ice from the northeast, and returning the same way it is inferred that Wrangel Land is inhabited.

The Englishmen have called the land after their



countryman Kellet, commander of the English man-of-war *Herald*, with which, in 1849, he endeavored to penetrate thither.

Kellet's attempt with that object succeeded no better than Wrangel's. He arrived at an island, which received the name of Herald Island; from whence,



LAPPS.

under the atmospheric conditions formerly alluded to, he believed he saw Wrangel Land.

The American whaling-captain, Long (of the bark *Nile*, 1867), is the last who saw and also took good bearings of the south coast of Wrangel Land which he passed at a distance of twelve miles.

On the morning of the 4th of September, after having done our best during the night to force a passage through, we found our way towards the northeast completely barred by strong compact drift-ice united by newly frozen ice two inches thick. There was nothing else to be done, but to endeavor to make the land, which, during the night and after most fatiguing labor, we succeeded in reaching direct west of Cape Baranoff. Here we found a fairly broad channel, seven to eight fathoms deep and free from ice. In future we made no further attempts to stand

out northwards, where we invariably met with impenetrable ice, but kept the whole time as near the coast as the depth permitted. This is really the surest way of making progress, as on the coast there is the efflux of larger or smaller rivers, which either cause it to be free from ice, or keep the broken ice-fields in constant motion so long as they are not united by fresh ice.

On the 5th of September we kept along the coast in a navigable stream. In the afternoon we passed under steam and full sail with a favorable wind Tchaun Bay. This was the last time in 1878 that we had an opportunity to carry sail. After this the ice became so close, and our course was so intricate, that we could not use canvas. The night of the 6th of September was the first night that the darkness prevented us from advancing. In future, during the darkest part of the twenty-four hours we had always to moor, either to an ice-field or still better to a portion of ground ice.

On the 6th of September, during the day we sighted the high land of Cape Shelagskoi, which we reached

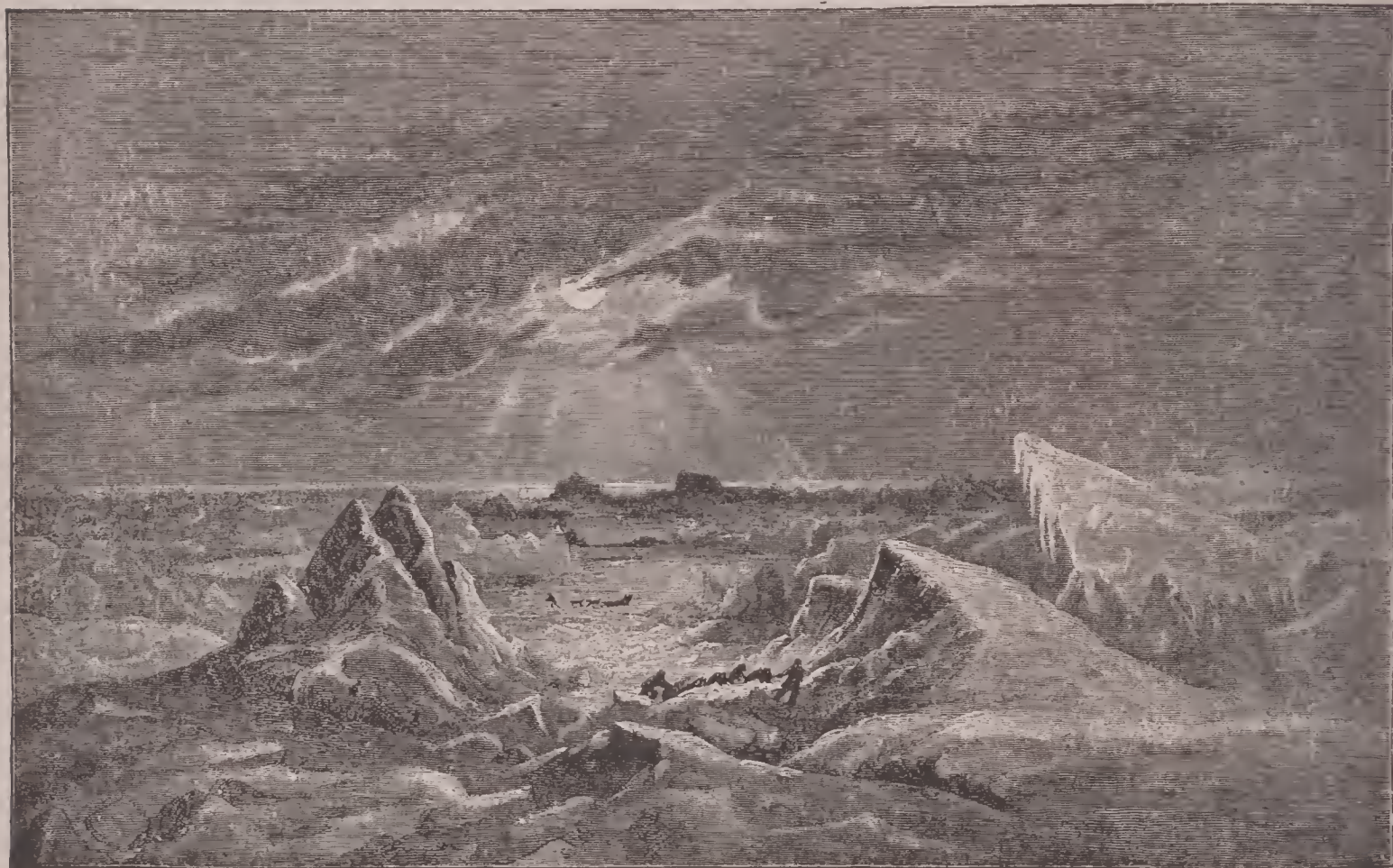
after some hours' struggle with a belt of drift-ice. Immediately to the east of this point we had our first sight of the natives, who came rowing towards us in two boats made of seal-hide. They could, however, give us no information in regard to the coast or the condition of the ice, as they could speak no language but their own Tchuktchis. After this we daily passed one or more native villages, and received visits from this kindly people. At Cape Shelagskoi the difficulties of the expedition seemed only to begin. From thence we encountered solid, compact ice, and could barely go forward two ship's lengths without collision with the same. On the 7th of September we passed Cape Yakan, and on the 8th, 9th, 10th, and 11th, worked our way through close, strong drift-ice, which was sometimes so impenetrable that we were compelled to moor to it and await some change in its



position. Only such a mode of procedure made it possible for us to get on. Occasionally we might make one or two miles, but usually only a few lengths of the ship. With the steam constantly up, we were prepared to take advantage of the smallest opportunity afforded by the ice of going forward. Fogs, shallows, and ground-ice were now the order of the day. For whole days, in three fathoms of water, sometimes, indeed, with not more than a few inches under our keel, we had to push our way through drift and ground-ice. These latter masses, larger and

bility of getting free being to blast with powder, or to hew away, by means of ice-tools, so much of their tops as lightened them sufficiently to allow them to float.

On the 12th of September, in the forenoon, we arrived at the North Cape, where we were detained six days by ice. The North Cape consists of two promontories, some hundred feet high, jutting out from the mainland. They enclose a shallow bay, about half a mile in length, with an inlet between northeast and northwest. In this bay the *Vega* lay, shut up by



WANDERING ON THE ICE IN WINTER.

heavier than the *Vega*, had to be removed. When this could not be accomplished by pressure with the whole strength of our machinery, we had to make an onset and rush against it at full speed. Only a vessel so strong and well constructed as the *Vega* could for any length of time have stood such blows. To run at full speed against ground-ice is equivalent to rushing against a fixed object. Either the ship or the ice must give way. Nevertheless our *Vega* went victorious out of the combat, not a single scratch appearing on her sides of scarlet oak. She frequently stuck fast between two ground-ices, the only possi-

the drift-ice. On the low sandbank which unites these promontories was situated a Tchuktchi village. We found the chief Tcheporin, a particularly attractive man. It was very amusing to see his astonishment, when, on one occasion, we invited him and his wife, Atanga, to the saloon, where he saw a number of things which to him appeared most wonderful. He was presented, among other articles, with an old gold braiding, which he bound round his wife's head like a diadem, placing the loop in the centre of her brow. Great was his delight at a performance on the barrel-organ. First he commenced to quiver in every limb,



and soon he was dancing most vigorously. For hours he would contemplate his brown, yellow face in a mirror. We here attempted to take a course of tidal

during the darkness, while forcing a belt of ground-ice, we touched the bottom; but the following morning, at four o'clock, we were again on the way quite uninjured.

On the 19th of September we succeeded in pushing our way forward about fifty miles. On the 20th, 21st, 22d, 23d, 24th, and 25th, our combat with the ice was continued, and we made but very little progress. On the 26th we rounded Cape Wankarem, where we found tolerably clear water caused by the rapidly flowing river of the same name. The same evening we also doubled Cape Onman, and on the following day we went right across Kolintchin Bay, passing close to Kolintchin Island. In the evening we moored close west of the northeast point of the bay. The 28th of September was a cold but clear morning. The sea had, during the night, been covered with a layer of ice one or two inches thick. We rounded the point, but afterwards could only push our way forward about four miles, when we had again to moor. I little thought on the morning of that day that this would be the last time during 1878 that our vessel would be on the onward move. We had before encountered stronger ice and fought against greater difficulties; and now to reach Behring Strait

we had only 120 miles to accomplish of the 4,000 which constitute the length of the Old World's northern shores.

At first no one would realize that we might be



THE "VEGA'S" WINTER QUARTERS.

observations, which, however, on account of our apparatus, and their collision with the ice, were unsatisfactory. The greatest deviation was only from five to seven inches. At last at midday on the 18th of September the ice dispersed so far as to permit us creeping along the sandy coast in three fathoms of water to continue our course towards our goal, Behring Strait.

The season of the year was now far advanced, and being acquainted with the sudden transition from summer to winter in the Arctic regions, we knew that at any time winter might set in in earnest, and make all further progress impossible. From this time the temperature was invariably below zero.

On the evening of the 18th



TCHUKTCHIS.



compelled to pass the winter here, but hoped for a change in the weather, and for a storm which would break and disperse the ice. But instead of this, however, the cold increased, and the new ice which connected the drift-floes daily became stronger and the weather became quite calm. Here we were to spend the winter—here where the American whalers find yearly quite navigable waters several weeks later than the 28th of September. The situation of our wintering station was, according to observations, Lat. N.  $67^{\circ} 7'$ , and Long.  $173^{\circ} 24'$ , 4,500 feet out from a flat, sandy beach, entirely unprotected from all winds excepting the south. Between the *Vega* and the shore were two sandbanks, the nearest having ten feet of water, the other still less.

At the outset of the expedition my impression was that the greatest difficulties in making the Northeast Passage would be experienced in rounding Cape Tchelyuskin, and possibly the coasts on both sides of the same, namely, from Taimyr Island to Khatanga Bay. All available accounts, however, agree that the coast between Cape Yakan or North Cape and Behring Strait is quite free of ice during the summer and autumn. When we had successfully rounded Cape Tchelyuskin, and had passed Cape Yakan so early as the 7th of September (therefore in good time), we calculated with certainty upon being able to pass Behring Strait the same year. On the contrary, our greatest difficulties commenced at Cape Yakan, and instead of diminishing in the same degree, the farther we proceeded eastward they became still greater and greater. We have good cause to infer that the condition of the ice in 1878 was peculiarly unfavorable, and that, under ordinary circumstances, we should have reached Behring Strait without difficulty and immediately thereafter the Pacific Ocean. We had now to content ourselves with having arrived at the entrance to Behring Strait during the first summer. As proof of the condition of these waters in other years, I quote the following from statistics supplied by the United States Admiralty: 1st, On the 21st of September, 1867, the American bark *Massachusetts*, Captain Williams, reached Lat. N.  $70^{\circ} 30'$ , Long. W.  $173^{\circ}$  (the same Longitude as our winter station), from whence no ice could be discovered round the compass. Captain Williams, an old whaler, and a man well acquainted with these waters, adds further, in his report, that he is convinced that no ice exists from the middle of August until the 1st of October south of Lat.  $70^{\circ}$  and west of Long. W.  $170^{\circ}$ , and that there is seldom a year when it is not possible during the month of September to sail in

navigable water between North Cape and Behring Strait. 2d, Captain Niebaum, also an experienced ice navigator, relates that Behring Strait is open till the first days of November, and that he, on two occasions, sailed through that strait as late as the 22d of October. 3d, In the year 1869 the bark *Navy* anchored at Kolinchin Island on the 8th of October, and sailed from thence to Behring Strait on the 10th of the same month. No ice was then to be seen, 4th, In 1867 the bark *Nile*, Captain Long, reached Lat. N.  $70^{\circ} 41'$ , Long. E.  $170^{\circ} 20'$ , coming from and returning to Behring Strait. 5th, The same year the bark *Monticello* went 150' farther west. Annually many small American coasting traders sail along the shores of Siberia even farther west, and carry on a bartering trade with the natives. We had evidence of this in the fact that among all the natives we have met, numbering more than a thousand, we have not met one who did not know a few English words.

More than fifty large vessels engaged in sealing and whaling north of Behring Strait swarm thereabout in all directions. The natives inhabiting the coast of Siberia between Cape Shelagskoi and the southern part of Behring Strait are called Tchuktchis, as already mentioned. Their number is estimated to be about 3,000, including a nomadic tribe called the Rein-Tchuktchis, who subsist by keeping reindeer herds. These form a link between their brethren on the coast and the inland tribes of Siberia, to the latter of whom they dispose of their goods, consisting of seal and walrus hides, walrus teeth, etc., which they receive from the country population in exchange for reindeer hides.

The coast population lives in villages numbering from three to twenty tents spread along the coast as near the shore as possible and at a few miles distant from each other.

The Tchuktchis are divided into two sections, each with its respective chiefs. The eastern population have for their chief Menka, who resides at Markowa on the Anadyr River. The western, again, are under the chief Amra Urgan, who resides in the vicinity of Kolyma River.

The tent of the coast Tchuktchis consists of a peculiar and cleverly-constructed frame of wood, the material for which is obtained from drift-logs with which the shore is plentifully strewn. This is covered with a number of seal and walrus hides carefully sewn together. Inside the tent and right before the entrance, is a smaller cubiform tent, made of reindeer skins, and used as the sleeping chamber. During the cold season it is heated by blubber lamps. Even



during severe cold the atmosphere within this tent is so heated that the natives who occupy it, without distinction of age or sex, lie almost nude. The dimensions of the tent depend upon the number of the family. In each tent generally dwells only one family, in which are included the sisters and brothers of the married couple before they settle for themselves.

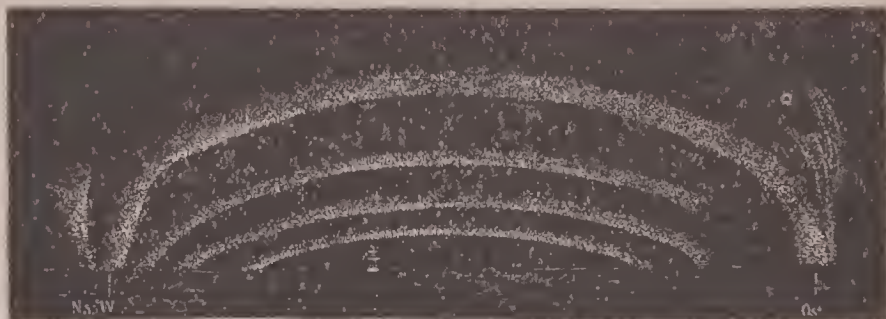
The Tchuktchis, the children of nature in the Arctic regions, fostered among ice, snow, and cold, familiarized with bloody scenes in the seal, whale, and walrus hunt, without any of the influences of civilization, are, notwithstanding, a good-natured, friendly, hospitable, and honest people.

Although the *Vega*, during the long winter, was daily visited by at least twenty natives, it was only on two or three occasions that they were found guilty of dishonestly appropriating anything, and these thefts were of the most trifling description.

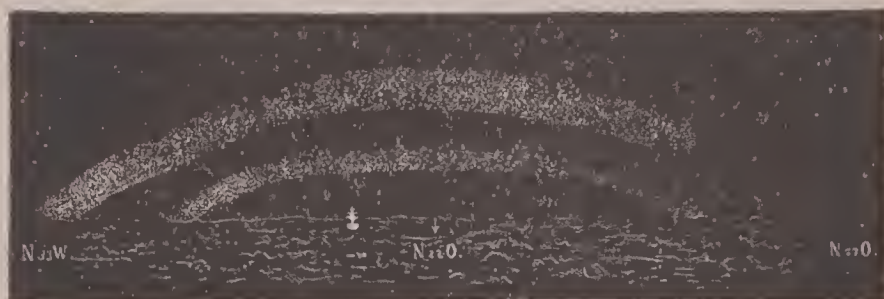
The Tchuktchis are a people of small stature, although among them may be found perfect giants; as for instance, a woman whom we saw was 6 feet 3 inches tall. Their complexion is sallow, the men's being usually darker than that of the women. Occasionally, however, one may see, especially among the women, a complexion as fair and clear as that of the inhabitants of Northern Europe. The eyes are black and often set oblique like the Chinese. The hair which is coal-black, is worn by the men cut quite short; while the women allow it to grow quite freely, part it in the middle of the brow and wear it in plaits of twelve or eighteen inches long, which hang down at each ear. They also wear a lock combed down and cut across which covers half of the forehead. The men also use a similar lock, and sometimes a long tuft at the crown of the head. This tuft is worn, so far as I could learn, only by chiefs.

Their clothing is made principally of reindeer skins, and consists of a pesk or blouse reaching to the knees, with an opening at the top just sufficient for the head to pass through. In addition, the men have tight-fitting trousers of reindeer skin, which are tucked down

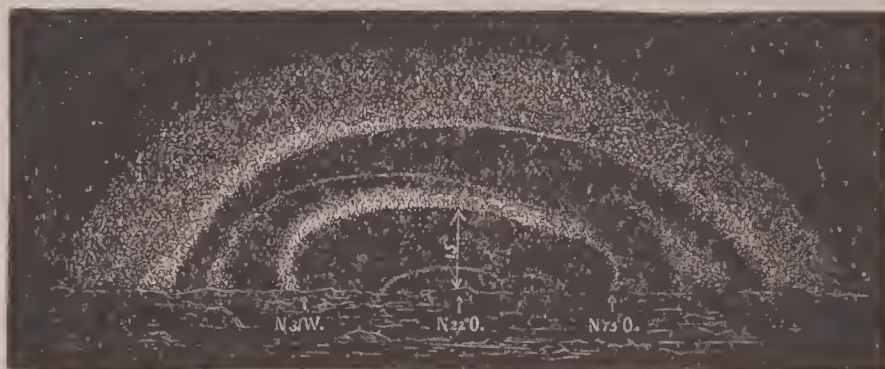
into boots of the same material, the latter with soles of walrus hide. The women also wear trousers, but those are wide, ending immediately below the knee, where they are similarly tucked into the boots.



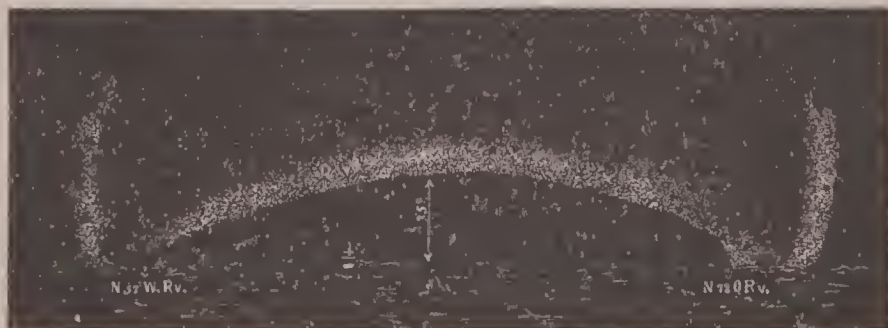
AURORA AT THE "VEGA'S" WINTER QUARTERS, 3RD MARCH, 1879, AT 9 P.M.



DOUBLE AURORA-ARCS SEEN 20TH MARCH, 1879, AT 9.30 P.M.



ELLIPTIC AURORA SEEN 21ST MARCH, 1879, AT 2 15 A.M.



ELLIPTIC AURORA SEEN 21ST MARCH, 1879, AT 3 A.M.

In the outer clothing the hairy side of the skin is always to the exterior; but, on the contrary, the hairy side of those articles worn next the body during the cold season is turned inwards. A close-fitting hood



of reindeer-skin and mittens of the same material, complete their dress. In this costume they defy any kind of weather. Often so clad, night after night, even in the most severe cold, they pursue their seal-fishing miles away from the shore without any other protection from the icy winds.

The weapons of the Tchuktchis consist of a bow and arrows, a spear, which, like the arrow and spear-heads, is obtained from the Americans and Russians in their bartering transactions. They themselves have no iron at their command, nor any knowledge of its working.

To their hunting implements belong the sealing-net, made of finely cut strips of seal-hide netted with a three-inch mesh. With these the young seals, which form their principal food, are caught. The net is extended between two blocks of ice, and the seals get entangled in its meshes; and so become an easy prey to the hunters.

Their dog-sledges, which are constructed of thin pieces of wood, tied together with strips of seal-hide, combine to a high degree strength and elasticity, and are singularly light.

Their mode of conveyance by sea is the *kajak* or the "large boat." The *kajak*, quite similar to the Greenland *kajak*, is covered with seal-hide; it only carries one man, who propels it by means of a common kajak oar or paddle. The "large boat" which also resembles the boat used in Greenland under the name of the "women's boat," is upwards of thirty feet long. It is rowed by six to ten men, with common oars or *pagajas*. This boat is constructed of a thin wooden frame, covered with seal and walrus hides. It has a flat bottom, from which its sides project at right angles. Its carrying capacity is very great. I have seen such boats having thirty people on board.

The hammer of the Tchuktchis consists of a stone tied to a stick; their spade, of a walrus' shoulder-blade fastened to a stick; and in the same manner they contrive other domestic utensils and tools. They are perfect masters in the art of joining by means of thongs of seal-hide,

The principal food of the natives consists of seal flesh and blubber, in addition to which they use feathered game, bear and reindeer flesh, when such can be obtained. The roots of certain shore plants, also willow-leaves *ranunculus* and *saxifrage*, etc., enter pretty largely into their diet. The leaves are collected in the latter end of the summer, pressed, and consumed during the winter; and in these they are, provided with a powerful anti-scorbutic. During the

winter, when getting short of other provisions the bones of seals and walruses caught during the summer are crushed, and prepared in the form of a broth or soup, which is consumed by both men and dogs. Of the latter there are a great number in every village, which are chiefly employed in conveying their owners by sledge from one place to another. Although these dogs are not large, three or four of them can with ease carry a man long distances. When the Tchuktchis undertakes long journeys of 300 to 500 miles he often has as many as eighteen dogs harnessed to his sledge, with which he is able to accomplish seventy or eighty miles a day.

During the first half of the winter we were daily visited by twenty to thirty natives, who got any food the crew might have left. Besides this they received a considerable quantity of bread from the ship's stores. They made themselves useful in several small ways, such as sawing wood, carrying ice, etc., etc. In the beginning of February, when their provisions began to run short, they all removed from Pitlekai (the nearest village to us) to another village further east, called Naskai, where they raised temporary tents, and carried on seal fishing in the open water to be found in the vicinity. About this time the natives made a great haul, allowing to each tent twenty-five to fifty young seals. Besides seals they got in the same vicinity a good catch of fish resembling cod.

At first we had some difficulty in holding communication with the natives, but we soon picked up a sufficient number of words to make ourselves intelligible. Lieutenant Nordqvist, who paid especial attention to the language of the Tchuktchis, ultimately became tolerably familiar with it.

After the 28th of September, the day on which our further progress was completely arrested, we still cherished a hope of getting free, and accomplishing the remaining little distance to Behring Strait the same autumn; but gradually this hope died out, and we began in earnest to think of the impending winter. With regard to the ship there was really nothing to do, as all preparations to resist an Arctic winter had already been made.

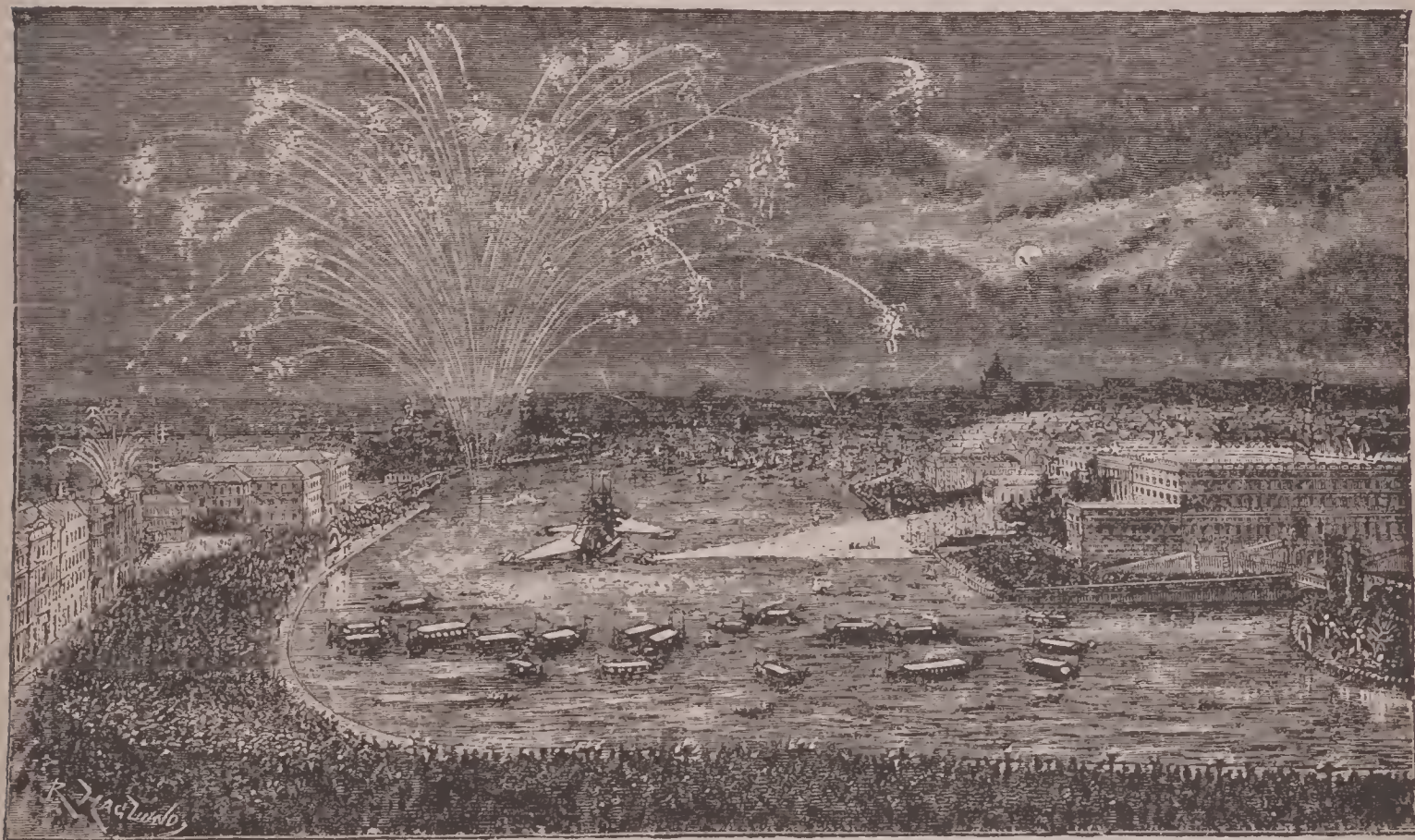
We fitted up the winter tent, the top rope of which was fixed midway up the masts, and from thence extended to the bulwarks. That the daylight might not be shut out from the saloon, the tent was not erected over the quarter-deck. The deck was covered with six inches of snow, which aided considerably in the exclusion of the cold from that quarter. The engine was kept during the whole winter in such



a condition that at three hours' notice it could be set in motion.

The vessel was heated by means of four stoves and the galley. One of the stoves was placed in the saloon, one in the engine room, one between decks, and one in the second mess. With these heating appliances we had no difficulty in keeping up an equable temperature in all parts of the vessel, even during the most severe cold ( $47^{\circ}$  C.). For fuel, part coals and part driftwood were used, the latter brought from the neighboring shore. For heating purposes we consumed about 12 cwt. of coal weekly.

magnetic observations were made every hour; and, in addition, on the 1st and 15th of every month, observations were made every fifteen minutes. Meteorological observations were also taken every hour from the 1st of December till the 1st of April; for the remainder of our stay, only every four hours. These observations were conducted by eleven persons, of which nine were men of science and officers, and two of the crew. The watch lasted for six hours, and the person on duty remained in the observatory all that time. The magnetic observatory consisted of a building twelve feet long and ten feet broad erected



THE ENTRANCE OF THE "VEGA" INTO STOCKHOLM, APRIL 24, 1880.

As I feared that the thick and rapidly forming ice might press with too great force on the vessel, I endeavored at first to keep her free of the ice on the one side by opening, by means of a saw, a three-foot-broad channel. Soon, however, this work had to be abandoned, as the cold overpowered us. After opening up the stream the one day, on the next we found it covered with ice six to eight inches thick. Should there happen to be a snowstorm during the night, it was immediately filled up with snow, and then the ice became still thicker.

From the 1st of December until the 1st of April,

on the land one hundred feet from the shore, and formed of sawn ice-blocks of an equal size. That we might, during snowstorms and darkness, have communications with the vessel without risk of losing our way, ice pillars were raised at a distance of forty feet from each other, between which ropes were stretched.

During the whole time we were shut up the wind blew almost continually from N.N.W. to N.W. Winds from other quarters were exceptional. The winds between E.N.E., N., and S.W. were cold, while, on the contrary, the winds from S. and S.E. brought



a milder temperature. In the first part of the winter, before the ice became too thick, the E. and S.E. winds broke it up and formed large holes or clefts north and east of the vessel. In a heavy northerly storm, at the beginning of November, the newly frozen ice one foot thick, pressing against the older and stronger, which lay around on the outer sand-bank directly astern of us, broke and piled up into *torosser* of some twenty feet high. On the same occasion the ice shot up on the flat beach and accumulated in several places so as to form ice walls of a similar height. On the 1st of January, about seven miles N.N.E. of the vessel, there was a channel running east and west, which was so broad that from its southern edge the northern was not discernible. During the latter part of the winter, when the cold became more intense, we could see no open water from our masthead but a continuous ice-field, whose even surface was only broken here and there by some old ice-blocks which had been frozen in by the new ice. Still, on several occasions, we saw the so-called "water-sky" from which we inferred that open holes were to be found, although at a great distance. When, in the month of May, we opened up a channel on the one side of the vessel, the ice nearest us measured seven feet thick.

When the temperature fell under  $40^{\circ}$  it was generally calm or a light breeze; under  $45^{\circ}$  we had a complete calm. To go long stretches against a fresh breeze with  $30^{\circ}$  of cold or even colder was anything but agreeable—nose, cheeks, and ears were easily liable to be frost-bitten. This can be obviated, however, without much difficulty by binding a thick silk handkerchief over the nose and letting the corners hang down over the mouth, by which respiration is made less disagreeable than otherwise it would be. During the whole winter we had only a few trifling injuries from the frost, notwithstanding that we were out in all possible weathers.

From the beginning of the month of December we made hourly tidal observations. Ebb and flood could scarcely be distinguished. The greatest variations during the spring-tide was only six to eight inches. The water level, however, varied greatly according to the direction and strength of the wind. The extent of these changes was different for different winds; southeast and south winds usually brought high water, two to three feet over the common water level. These observations were made by means of the following apparatus: A metal wheel of the circumference of a metre was fixed on the top of the boom. Over that wheel was laid a fine brass-wire line, the thick-

ness of a common log-line, the two cords of which were taken down through the rudder-hole, one upon each side of the helm. The one end was carried through a hole made in the ice beside the rudder, and fastened to two bars of iron which were sunk to the bottom; and the other was fixed to a cannon-ball at such a height that it was suspended in the centre of the rudder-hole. The cannon-ball served to keep the line constantly on the stretch. A board, with foot and inch measurements, was placed between the boom and the deck, and on the line an indicator which, according as the vessel rose or fell, pointed out on the scale the rising and falling of the water.

As we wintered in Lat. N.  $67^{\circ} 7'$ , we had not to endure the tedium of constant darkness, which is one of the trials of a winter spent in these regions in higher latitudes. On the darkest day of the year the sun, with the aid of refraction, showed half its disk above the horizon at midday. In the saloon, from 10 A.M. until 2 P.M., we had as much light as permitted us both to read and write. Outside one could readily find their way about from 9 A.M. until 3 P.M.

Christmas was celebrated in the usual Swedish style—with Christmas tree, Christmas presents, fish and sweet porridge, Christmas Eve was spent between decks, which, for the occasion, was decorated with suitable flags and signals. A wooden spar, with willow branches (which had been brought from the land) tied to it, did duty as a Christmas tree. It was hung with paper flags and 200 presents, which latter were divided by lottery among the whole company.

During the winter we had several opportunities of sending home news, of which we naturally took advantage, although uncertain if these communications would ever arrive at their intended destinations. So early as October we were visited by the chief Menka, mentioned before, and by him we sent letters and telegrams to Anadyrsk, to be forwarded from thence to Sweden. There is, however, no regular postal communication between Anadyrsk and the larger Siberian towns lying further west. The letters would not arrive at Nijni Kolymsk until March, when a great annual market is held there. From thence they would be conveyed by visitors to the market homeward bound to Yakutsk, with which regular communication exists. In this way we could not expect our letters to arrive in Sweden before June or July. On several occasions we sent letters with natives on the homeward trip to Nijni Kolymsk, to be forwarded in a similar manner.

As far as the weather permitted the crew always followed their various occupations in the open air,



and it was only in extremely severe weather that they were allowed to work under deck. During their leisure hours they had access to an exceedingly well-supplied library; and for their profit and amusement suitable lectures were given every Saturday evening during the darkest season—which, thanks to our scientific companions, were as interesting as they were instructive. In addition to the common rations, the crew received daily during the spring months two cubic inches of cranberry preserve twice a week, five cubic inches of mulberry preserve four times a week, pickles, besides fresh fish or reindeer flesh as often as they could be obtained by barter from the natives—usually once a week. As something remarkable, and, so far as known to me, unexampled in the instances on record of winters passed in these regions, not a symptom of scurvy appeared on board the *Vega* during our stay. In my opinion our exemption may be attributed to the following circumstances:

*First*, That we were supplied with sound, good, and, for our habits, suitable food.

*Second*, That we never had unbroken darkness, which exercises a depressing influence on the spirits.

*Third*, That we did not suffer from damp of any moment on board, consequent on the *Vega's* thick sides, and an equable heat being preserved; and,

*Fourth*, That we all led an industrious life.

Spring seemed to delay her coming. On the 31st of May the sun was circumpolar; but notwithstanding, its rays were yet without sufficient strength to dissolve the masses of snow which were accumulated on the land. Not until the middle of June did the snow begin noticeably to diminish day by day, and in the beginning of July the ground was for the most part bare. Immediately after the melting of the snow the land became green and the flowers sprang up. It is wonderful how rapidly winter and summer succeed one another in the Arctic regions. No sooner has a tuft become bare, than it is verdant and flower-clad. This sudden change is absolutely necessary in order that, during the short summer of barely two months, everything may quickly mature and furnish seed for another growth.

While the snow was melting a great number of birds had gathered and hovered about the streams and lagoons which lay at a longer or shorter distance from shore. Our hunters had occupation from morning till night, and our table was always supplied with feathered game of every description, the most appreciated being geese and sandpipers. The melting of both floating and ground-ice went on rapidly during this time. In the vicinity of the ship, the

thickness of the ice diminished one or two inches daily, depending on whether the wind was north or south. The former brought a colder, and the latter, which often blew a gale, a warmer atmosphere. Open holes and long narrow tunnels began to appear to the north and northeast of the vessel. These opened and closed according to the quarter from whence the wind blew, whether south or north, which indicated that the ice outside was in motion. In the beginning and middle of July, a great quantity of water stood on the ice to the inward of the vessel, and communication with the land became daily more and more difficult.

On the 18th of July, during a stiff breeze from the south, I noticed that the line to our tide-meter showed astern; and immediately after, I saw the ice to the landward of us separating from the outer ground-ice belt. The engine fires were lit and at half-past 4 P. M. the vessel was set in motion. Half an hour later, we were out in a channel which continually increased in breadth the farther we proceeded, and before evening we were in a comparatively navigable sea. After a detention of nine months and twenty days, we had at last got away as quietly and with as little risk or trouble as if we had gone out to sea from a common harbor.

On Sunday the 20th of July, at 11 A. M. we passed East Cape, and had then quite completed the Northeast Passage. In celebration of this event, the national flag was hoisted and a salute given. The same evening we anchored at the mouth of St. Lawrence Bay.

The Northeast Passage has unquestionably been accomplished for the first time by the Swedish steamship *Vega*. I attribute the circumstance that this has occupied a year, when it ought to have taken only two months, had there been no special difficulties, to the unusually unfavorable condition of the ice during September, 1878. To answer the question if the Northeast Passage can annually be made in one season? I am not able because the ice conditions are so different in different years. The part of the sea nearest the coast is certainly free from ice, during the summer and autumn months, opposite to and east from the efflux of a river; but against this must be placed the difficulties to be met with at and around Cape Tchelyuskin and Taimyr Island. That a passage is to be found there also once or several times in the summer is equally certain, but that may occur so late that, before one can reach Behring Strait the winter has again set in. At the same time I will not by any means say that there may not be found there



during the whole summer and autumn a channel free from ice ; but as there is no river effluent in the vicinity of Cape Tchelyuskin and Taimyr Island, which, with sufficient strength, can force the ice northwards, as is the case with the great rivers Obi, Yenisei, Lena, and Kolyma, it may be inferred that the ice there is principally influenced by the winds—namely, that the north wind forces the ice towards land, the south having a contrary effect, and that, consequently, the doubling of these points cannot be calculated upon with certainty at any time, even during the navigable season. The Northeast Passage cannot, therefore, in its entirety be made available for the purposes of commerce, but still an annual traffic might easily be carried on from the westward to the Obi and Yenisei, and from the eastward to the Lena. Unquestionably, the way now lies open to Siberia's three greatest rivers ; and that land, so rich in minerals, timber, and grain, whose export and import trade has hitherto been conducted by means of caravans, ought now to obtain a practicable route as a connecting link between the New and the Old Worlds. In regard to the communication with Yenisei, since Professor Nordenskiöld, for the first time, reached that river, in 1875, it has been annually visited by European vessels conveying European commodities to Siberia, and returning from thence loaded with Siberian products. The traffic to the Lena will probably be taken up

by American traders ; and the safety of the voyage there and back should be insured when a chart of the Siberian coast has been obtained, as also by the employment of strong and swift steamers.

At St. Lawrence Bay we remained only till midday on the 21st of July, when we weighed anchor and steered over to the American side, where we anchored at Port Clarence. We remained there until the 26th, when we again crossed over to the Asiatic side, and anchored in Konyam Bay. From thence we went, on the 28th, to the St. Lawrence Island, remaining there from the 31st of July till the 2d of August. We then steered for Behring Island, where we anchored at its southwest point, on August 14th. We found here a small village, with a church and twenty-five wooden houses built and owned by an American firm, Hutchinson, Kohl, Philippens & Co., who here and on the neighboring islands carry on seal fishing. The inhabitants of the island, consisting of a few Russian Government officials, some employés of the company and natives of the Aleutian Islands make in all about 300 who reside in the village. There we received our first news from Europe through American newspapers, the latest of which were printed in San Francisco, in April, 1879, and brought from thence by one of the company's steamers. On the 19th of August we left Behring Island, and set our course for Yokohama, where we arrived on the 2d of September.

## CHAPTER XIV.

### VOYAGE OF THE JEANNETTE—1879-1881.

IT may be remembered by our readers that in 1873 news was received in New York that some survivors of the *Polaris* had been picked up by a whaling ship, and that the report they gave of her condition induced the United States Government to send out the *Juniata* to relieve her. We reached Upernavik without obtaining any further information of the *Polaris*, and from that Danish settlement a boat expedition along the coast was sent out under the command of Lieutenant George W. De Long. The largest steam-launch of the *Juniata* was carefully strengthened with outer planking, thoroughly equipped and provisioned for sixty days. The launch was appropriately named the *Little Juniata*, and instructed to proceed northward towards Melville Bay. He left Upernavik on August

2d, but encountered severe storms, and De Long was soon convinced that prosecuting the search any longer was out of the question. On August 8th, he sighted Cape York, the weather being foggy and the wind rising. At midnight the launch had hauled alongside an iceberg to fill up with fresh-water ice for drinking, when the ice-pilot noticed a crack in the berg. The order was at once given to shove off and the *Little Juniata* had scarcely reached a safe distance when, with a loud report, the iceberg was rent to pieces. The launch was tossed and tumbled by the waves but escaped unharmed. The gale continued to increase and the fearful sea rendered the little boat's situation one of great peril. She was now unable to steam against the tempest and she could not lay to ; the



edge of the pack was a scene of wild confusion, and the fog was very thick. Not till August 9th was there a lull, and the crew attempted to get up steam; but the fire-room was half filled with water, the coal bunkers in the same condition, the matches were wet and the tinder saturated. It took several hours' work before they succeeded in getting a match dry enough to ignite, George May having warmed and dried it by placing it next his body. With this match a candle was lighted, but was immediately blown out by the wind, and the same tedious process of drying had to be repeated. When the candle was alight, there was no dry wood to kindle, and it was only by taking cotton waste and punk, wet as they were, and pouring oil plentifully over them that they succeeded in lighting the fires.

After this escape the *Little Juniata* rejoined her parent ship, and on receiving news that the crew of the *Polaris* had been picked up by the whaler, *Arctic*, the expedition returned to New York.

Soon after this apprenticeship to Arctic difficulties, Lieutenant De Long opened communications with James Gordon Bennett, and proposed that the editor of the *Herald* should send out an Arctic exploring expedition. After due reflection Mr. Bennett and Lieutenant De Long determined, in 1876, to dispatch a vessel towards to the North Pole the following summer, and, as no American vessel suitable for the purpose could be procured, the *Pandora* was purchased from Sir Allen Young, and re-named the *Jeannette*. Various delays however, prevented her sailing till July 8, 1879, when she started from San Francisco.

The choice of the starting point shows that the *Jeannette* was to penetrate the Arctic waters by the way of Behring Strait, and on August 28th she passed through it, a heavy fog blowing over the bluff headland on the Asiatic side. On the 30th a party landed at Cape Serdze Ramer, and ascertained that Norden-skiöld had arrived there safely a month before. The course of the *Jeannette* was now directed towards Wrangel Land, and on Sept. 4th she sighted Herald Island, so called by the explorer, Captain Kellett, of the English ship *The Herald*. Around this island the expedition drifted for some time, but by Oct. 11th she was fast in the ice, and the usual preparations for wintering were made. "Wintering in the pack," De Long writes, "may be a thrilling thing to read about by a comfortable fire, but the actual thing is enough to make any man prematurely old; sleeping with all clothes on, and starting up anxiously at every snap and crack in the ice outside, or the ship's frame within, effectually prevents my getting a proper amount of

rest, and yet I do not see anything else in store for me." On Nov. 24 the *Jeannette* broke adrift from the floe, and the following day was a most anxious and exciting one. If the ship were free when the ice moved she would go along with it; if she were tied up she might have to stand the brunt in an unfavorable position. The advancing ice soon was upon her, and she was pushed, forced, squeezed, driven through the mile of a canal amid a grinding and groaning of timbers, and a crashing and tumbling of ice that was fearful to behold. The winter passed in its usual monot-

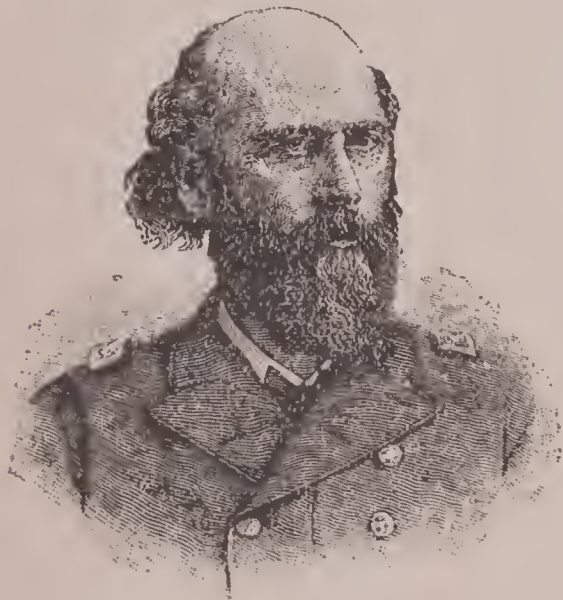


GEORGE W. DE LONG.

onous routine of duties—daily walks of two hours duration, hunting, and the like, and De Long writes in a depressed state of mind: "When we add to wintering in the pack with all its uncertainties and terrors, the knowledge that we attained no high latitude our first season, made no discoveries, as far as we know, have made no useful additions to scientific knowledge, we cannot help feeling that we are doing nothing toward the object of the expedition." On Christmas, he notes, that their surroundings were not of the most cheerful character; that in fact it was the



dreariest day he had ever experienced in his life. On New Year's Day, 1880, the crew had rallied from their failure to get up any performances on Christmas Day, and a minstrel entertainment was given with great success. The cold snap began to be severely felt; the berth deck was beaded with moisture, and the mattress covers were mildewing. The master, Danenhower, was suffering from inflammation of the eyes, and had to remain in total darkness; but the greater part of the crew was in good health. On Jan. 10th a loud noise as of the cracking of the ship's frame from some great pressure startled De Long as he was sitting in his cabin, and, on making an examination, he found that water was pouring in, that the fore hold, store-room, and part of the fire-room were under water. It was difficult to start the steam-pump, but



GEORGE W. MELVILLE.

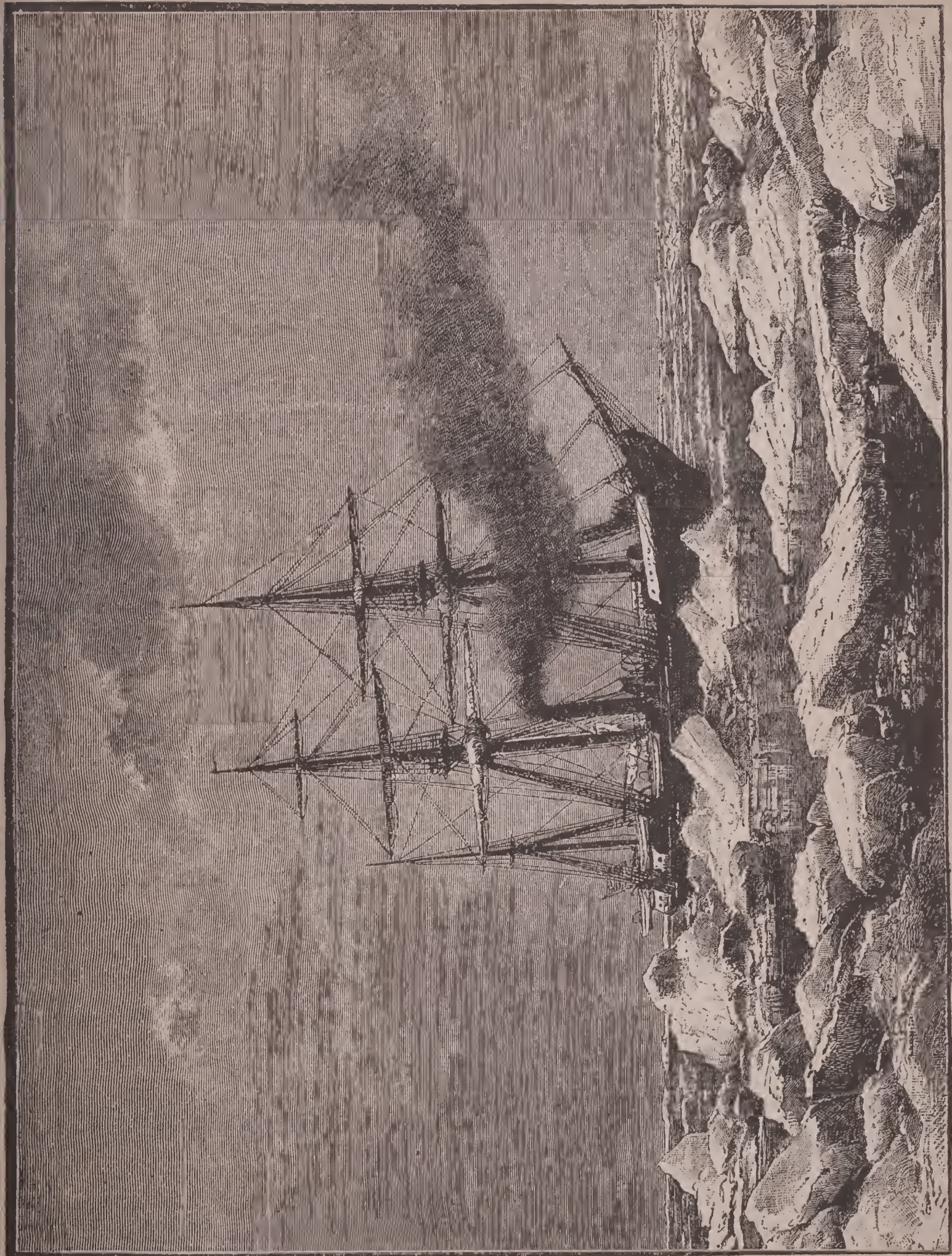
Engineer Melville, by indomitable energy, succeeded in getting it into working order. All hands were on deck till midnight, and all preparations made to leave the ship, sledges packed, boats ready to lower, and knapsacks for the crew at hand. Fortunately the danger passed away, but, with Danenhower sick, the doctor the same, and Dunbar still weak, there was little rest for De Long, Chipp, or Melville. Till the end of the month the record is, "Pump, pump, pump," but on February 1st the water was held in check. During this anxious period Melville was untiring in refitting, rearranging, and repairing the steam-pumps. Worst of all was the fact that to keep the steam-pumps running a great amount of coal had to be consumed. On February 19th the Lieutenant writes, "Our coal supply steadily diminishes, and all our hoped-for explorations or discoveries seem slipping

away from us. Danenhower had undergone an operation to save his left eye, but it seemed a foregone conclusion that he would lose it. There was little change in this depressing state of affairs till July, when at length the leak was stopped. The *Jeannette* had now been ten months in the ice, and, on examining the stock of coal, De Long found he had only fifty-six tons left, of which thirty must be kept for cooking and warming, leaving twenty-six for steaming. 'With this,' he exclaims, 'I have to make the Pole, accomplish the Northwest Passage, or go back empty-handed.' On July 4th he writes, 'We certainly have not realized our anticipations by long odds, and I see in the faces around me no hope of so doing.'

Of all records of Arctic travel, this one under De Long is the most distressing. The expedition was not undertaken for any useful purpose, but to advertise a newspaper; the ship was not adapted for the work, and the officers and crew had no experience of Arctic work. That all the crew from its commander downwards displayed the utmost gallantry, the most remarkable fertility of resource and the highest endurance, is to their credit, and reflects honor on every American seaman. America has had nobler sons; but even their heroic temperament seemed very soon to presage evil fortune, their spirits were depressed, and words of despair are not far distant. "I confess to so much disappointment and mortification that I am ashamed each day to make an entry in this book. No matter how much we have endured; no matter how often we have been in jeopardy; no matter that we bring the ship back to our starting point; no matter if we were absent ten years instead of one, we have failed." This is not the temper that leads to success. On August 12th he cries: "The irony of fate! How long, O Lord, how long!" "If we only could do something!" he writes the next week. On the 29th he says, "Of course it is for the best that we are here, else it would not be the case, but oh! how hard to draw any consolation from it."

In September preparations for a second winter were begun, with careful attention to the probability of having to abandon the ship suddenly. Snow was banked up against the ship's side, bear-traps were set, and the old tale of imprisonment begins afresh. "For nearly nine weeks," De Long writes in his diary in October, "we have had rest and now our old cares and anxieties begin again to end—when? We have an injured ship, small amount of coal and hardly the same vigor as a year ago; we have to trust to God and remain by the ship. If we are thrown out on the ice we must try to get to Siberia if we can drag our-





THE "JEANNETTE" IN THE ICE.



selves and ford over the two hundred and fifty miles intervening." In November he notices that their rest was broken and unnatural, the men lying awake for hours, and rising every morning dull and heavy. Christmas was again celebrated, this time with more success than in the previous year, and the eve of New Year's Day the performance renewed. The first entry on New Year's day is: "I hope to God we are turning over a new leaf in our book of luck." In February the sun reappeared, and on the 18th it is recorded that Danenhower, after repeated operations and long confinement, was now able to get a bit of sun and fresh air occasionally, and De Long adds, "That there was no reason to hope for his improvement, till he could be operated on ashore, and no reason to fear unless we should be turned out of the ship." In May the diary contains items like: "How long could a body of men stand this enforced monotony? I do not care to commit to paper even my own ideas," till on the 16th land was seen, the first land that had greeted their eyes since March 24, 1880. Fourteen months without anything to look at but ice and sky, and twenty months drifting in the pack, will make a little mass of volcanic rock as pleasing as an oasis in the desert." The island was located in Latitude N.  $76^{\circ} 47' 28''$  Longitude E.  $159^{\circ} 20' 45''$  and called "Jeanette Island." On May 24th more land was in sight, and named "Henriette Island." A party under Melville was despatched May 31st to take possession; it landed June 2d, hoisted our flag, erected a cairn, and placed in it a record. On June 8th the ship was drifting rapidly to the westward of the island, and on the 10th (ship's date, which was really the 11th), the ice suddenly opened, and on the following day the first crash came. The ice commenced to move toward the port side, but after advancing a foot or two came to rest. At 10 A. M., it had advanced toward the port side until these floe pieces had received the thrust, and everything quieted down again. At 4 P. M. the ice came down in great force all along the port side, jamming the ship hard against the ice on the starboard side of her, and causing her to heel  $16^{\circ}$  to starboard. From the snapping and cracking of the bunker sides and starting in of the starboard ceiling, as well as the opening of the seams in the ceiling to the width of one and one-fourth inches, it was feared that the ship was about to be seriously endangered, and orders were accordingly given to lower the starboard boats and haul them away from the ship to a safe position on the ice-floe. This was done quietly and without confusion. The ice, in coming in on the port side, also had a move-

ment towards the stern, and this last movement not only raised her port bow, but buried the starboard quarter, and jamming it and the stern against the heavy ice, effectually prevented the ship rising to pressure. Mr. Melville, while below in the engine-room, saw a break across the ship in the wake of the boilers and engines, showing that so solidly were the stern and starboard quarters held by the ice, that the ship was breaking in two from the pressure upward exerted on the port bow of the ship. The starboard side of the ship was also evidently broken in, because water was rising rapidly in the starboard coal bunkers. Orders were now given to land one-half of the pemmican in the deck-house, and all the bread which was on deck, and the sleds and dogs were likewise carried to a position of safety. At 4.30 there was a lull in the pressure, and it was assumed for the moment that the ice had united under the ship, and being as close together as it could come would occasion no further injury, and that they might be able to take care of the ship yet. The ship was heeled  $22^{\circ}$  to starboard, and was raised forward  $4' 6''$ , the entire port bow being visible also to a height of  $4' 6''$  from the forefoot. In the early morning De Long writes we had been able to see through the water down alongside the stern on the starboard side, and we could see that the forefoot was bent to starboard about a foot. This would indicate that the pressure received on the 19th of January, 1880, was from port to starboard, instead of the other way, as we then supposed. But at 5 P. M. the pressure was renewed and continued with tremendous force, the ship cracking in every part. The spar deck commenced to buckle up, and the starboard side seemed again on the point of coming in. Orders were now given to get out provisions, clothing, bedding, ships books, and papers, and to remove all sick to a place of safety. While engaged in this work another tremendous pressure was received, and at 6 P. M. it was found that the ship was beginning to fill.

From that time forward every effort was devoted to getting provisions, etc., on the ice, and it was not desisted from until the water had risen to the spar deck, the ship being heeled to starboard about  $30^{\circ}$ . The entire starboard side of the spar-deck was submerged, the rail being under water, and the water line reaching to the hatch combings. The starboard side was evidently broken in abreast of the mainmast, and the ship was settling fast. Our ensign had been hoisted at the mizzen, and every preparation made for abandoning, and at 8 P. M. everybody was ordered to leave the ship. Assembling on the floe, we dragged all our boats and provisions clear of the bad cracks, and pre-



pared to camp down for the night. On the 12th, the mizzenmast of the ship went by the board, and her lower yard-arms rested on the ice. In two hours' time she sank till her smokepipe had nearly disappeared, and at 4 A. M. she righted to an even keel and slowly sank. So ended the *Jeannette*.

For the next six days all hands were busy preparing for the march; sledges were loaded and men assigned, clothing served out, and an order of march and daily routine issued; and on June 18th the shipwrecked explorers started on their journey, all except five were in good-health; these were Danenhower and Chipp, and three men—Alexey, Tong Sing, and Kuehne. At no time of the year was travelling worse than at this; the ice was in bad condition and progress almost impossible.

On June 23d, the daily routine and manner of progress marked out on the 16th had to be abandoned for several reasons, the principal of which was the impossibility of telling one minute how the ice would be the next; and, second in importance, because men cannot do this kind of work ten and a half hours each day without breaking down. By and by, perhaps, when our loads are lighter, we may be able to do it, but just now it is out of the question. Our route having been indicated by several black flags placed after a halt, or before a start, Mr. Dunbar goes ahead at 8 P. M. to make sure that no bridges have become necessary in the meantime. Then right after him goes Melville, with nearly all hands, dragging the heavy sleds. No. 1 (already christened the *Walrus*) requires all his force, but generally he can start two of the others at one time. Ericksen and Leach run two dog-sleds, trip after trip, all day; while I load and occasionally run one myself ahead, to mark progress and indicate the route. The loaded sleds being up, Melville's party comes back for the boats. "I then start the doctor ahead with the sick, to go as far as the heavy sleds have been dragged. I then get the medical sled and run a load up to the same place. By this time the boats are up, and 11 P. M. has arrived, and I break off the cooks to get dinner while Melville and his party drag the sleds ahead another stage. Then there is midnight, and—"

June 24th, Friday.—Dinner succeeds. At one, we turn to, drag the boats to where we left the sleds; then along goes the doctor and the sick to that place; then ahead go the sleds again; again the boats, always the dog-sleds, and, finally, at 5:30 or 6 P. M., I bring up the rear guard. We prepare for supper, pitch camp, and the dog-sleds get up with the last

load. At seven we sup, at eight pipe down, to be called at 6 P. M.

We, therefore, haul nine hours a day, sleep or rest ten, meal-hours three, and the other two hours are occupied in pitching camp, serving out and cooking food, breaking camp, and marking road ahead. There is no work in the world harder than this sledging; and with my two line officers constantly on the sick list I have much on my hands. In Melville I have a strong support, as well as a substitute for them; and, as long as he remains as he is, strong and well, I shall get along all right. The doctor is willing and anxious to pitch in and haul like a seaman, but I consider him more necessary to the sick, and have directed him to remain with and accompany them."

This extract from De Long's diary tells better than anything the terrible difficulties they had to contend with. These difficulties were regular, and, once mentioned, need no repetition. In July evidences accumulated that land was not far off, and it was hoped that it was the Liakoff Islands. On the 28th the fog cleared up a little, and the situation improved somewhat, as a few pieces of ice offered a convenient bridge. A large floe cake was ahead. Everything was embarked on an ice-cake for a ferry-boat, and a hauling line run through the floe. By great effort we got our piece clear by 4 P. M., and commenced to haul over. Suddenly everybody gave a shout, "Look!" Away up over our heads 2,500(?) feet towered the land, and we were sweeping past it like a millstream. Hurriedly sounded in eighteen and one-half fathoms. Soon our floe was reached. Away we jumped our sleds and boats and, seeing two or three large cakes nearly together, ran everything rapidly over until we at last stood at the base of the ice-cap. It was a narrow squeeze, for the men with the tents and the remaining loose provisions on their shoulders had hard work to run fast enough to get on the last cake before the other cakes were swept away. Now that we were on the last cake our situation became critical. We could not get up on the ice-foot, for ten feet of water and small lumps intervened, and we were sweeping along by it at a rate of three miles an hour. Our cake was none of the strongest, and in the swirling and running masses and small bergs I feared we should be broken and separated. It was an anxious moment. The southwest cape of the island was not half a mile away, and this was our last chance. Over two weeks of dragging and working to reach this island seemed about to be thrown away. I soon noticed our cake begin to turn round, and saw that it might be whirled into a kind of cor-



ner against the fast ice, where, if it remained long enough, a landing might be effected.

"Stand-by," was the order now; and, with sled ropes in hand, we waited the trying moment. Soon our cake caught and held. "Now is the time, Chipp!" I shouted; and away we went.

One sled got over on the rough ice-foot all right; a second nearly fell overboard; the third *did* fall overboard, dragging in Cole; and a piece of ice had to be dragged in by sheer force to bridge for the fourth. When I started the St. Michael's sleds, they seemed to stick somewhere. Watching our cake closely I saw signs of its giving way. "Away with the boats!" But how? Nindemann sang out that he thought we could float the boats below, and haul them over. No sooner said than done, and down they went into the water. The men were hurried from the sleds to the boats, and I saw the first cutter just beginning to haul out, when away swept our ice-cake, carrying Melville, Iversen, Aneguin, and myself, with six dogs. Wilson had carried one load of dogs over in the dingy, but he could not get back for the remainder. Chipp was on the ice-foot with the boats, and I knew he could look out for them, and I felt pretty certain we had saved everything. For ourselves, on the drifting ice-cake, I had some little anxiety, but one corner of our cake fortunately soon after drifted near a fast berg, and by making a flying leap through the air, we escaped in safety. At last! But though standing still, we were not ashore. The ice-foot extended out from the land, and was a confused mass of piled-up ice-blocks and ridges, honey-combed, cracked, and broken, and presenting a simply impassable road for travel with sleds. Glad enough was I to get a solid foothold anywhere, and I gave the order to camp at 6.30 P. M. (our first sled having got on the ice-foot about five), everything being hauled in as near to the land as possible, say fifty feet from it. Rocks were occasionally slipping down and falling into a little stream of water at the foot of the cliff, the stream being where the thawing of surface ice has left a channel about four feet deep.

Supper at 7.30 P. M. At 8.30 P. M. all hands were called to muster, and, led by me, everybody waded, or jumped, or ferried over to the land, where we held on as well as we could to the steep slopes of débris, while our colors were displayed. When all had gathered around me, I said, "I have to announce to you that this island, towards which we have been struggling for more than two weeks, is newly discovered land. I therefore take possession of it in the name of the President of the United States, and

name it Bennett Island. I now call upon you to give three cheers." And never were there more lusty cheers given. With great kindness three were then given for me. The crew were given as much liberty as was possible on American soil; but, as Jack complained, it was a dry christening, and though he was just come ashore with two years' pay, where was he to spend it?

On August 6th, they left Bennett Island in three boats, De Long in the first cutter, Lieutenant Chipp in the second, and Melville in the whale-boat. Winter had now really set in, but as long as there was open water their progress to the south was rapid. Experience, however, soon showed that it would be impossible to carry the sleds with them across the open water between the islands, for which they were making, and the coast of Siberia. The sleds, therefore, were cut up for firewood, but next day they found themselves shut solidly in the ice, and it became evident that the existence of the party depended on their provisions. On August 18th, the last ration of bread was served out; the ration of Liebig was reduced to half an ounce per diem, coffee was served out at breakfast only, and tea at other meals. In September the party landed at Kotelnor Island, one of the New Siberian group where several ruined huts were seen and piles of deer horns. They found here elephants' tusks, wooden cups, spoons, and forks, and a Russian Kopek, dated 1840. September 10th saw them at Semenovski Island, and De Long had great hopes of being able to go on to the Lena without difficulty. Cape Barkin, the point of destination, was only ninety miles distant, when on the night of the 12th the wind freshened to a gale. At 9 P. M. De Long lost sight of the whale-boat, and at 10 P. M. of the second cutter. Melville describes the scene in these graphic words:

"So when De Long waved me permission to leave him, I hoisted sail, shook out one reef, and as we gathered way the boat shot forward like an arrow, and the spray flew about us like feathers. Heretofore we had been running dead before the wind on our southwest course for the land, but the heavy sea and lively motion of the boat caused the sail to jibe and fill on the other tack, whereupon we would broach to and ship water. For this reason I hauled up the boat several points, or closer to the wind, and our condition at once improved. Now that we were separated, I resolved to concern myself directly with the safety of my own boat; so that when one of the men said that De Long was signaling us, I told him he must be wrong, and further directed that no one



should see any signals now that we were cast upon our own resources.

"The whale-boat was leaping forward at a spanking rate and fast distancing the first cutter, when, hearing another of the crew exclaim that De Long was signaling Chipp, I turned around and looked back over my left shoulder towards where I expected the second cutter would be. For an instant she was not to be seen, but presently I saw her far off in the dim twilight rise full before the wind on the crest of a

living members of the first cutter (Nindemann and Noros) has confirmed me in this belief; for they witnessed the scene as I have described it, and state that it was the general opinion of De Long's crew that I had shared the same fate simultaneously with Chipp."

After a miserable day and night De Long and thirteen others landed at the Lena Delta, and resolved to walk to a settlement which they calculated would be ninety-five miles distant; for this journey they had four days' provisions and were all well.



LANDING ON THE HENRIETTA ISLAND.

wave, and then sink briefly out of sight. Once more she appeared; an immense sea enveloped her; she broached to; I could discern a man striving to free the sail where it had jammed against the mast; she plunged again from view; and, though wave after wave rose and fell, I saw nothing but foam and seething whitecaps of the cold, dark sea. When last seen, the second cutter was about one thousand yards astern of us, the first cutter probably midway between, and there is no doubt in my mind that she then foundered. A conversation with the only two sur-

Progress, however, was terribly slow, the men were soon used up, all of them seemed to have lost feeling in their toes. "I was much impressed," writes the unfortunate leader, "by an accident last Sunday. Our Bible got soaking wet, and I had to read the epistle and gospel out of my prayer-book. The gospel contained some promises which seemed peculiarly adapted to our condition. The passage was Matthew vi. 24. Deer tracks were seen, and this cheered them a little, but one of the men lay down desiring to be left, he could not keep up with the party nor could



they carry him. To reach anywhere in four days with men disabled is out of the question." Nindemann and Alexey were sent out to shoot deer if possible, but, although they saw a herd, they could not get near it. On September 21st they were eighty-seven miles from a probable settlement, with two days' rations and three lame men who could not make more than five miles a day, and De Long concluded to halt his main body at a spot where some huts were discovered standing, and to send on two good walkers to get relief. The doctor (Ambler) and Nindemann, were chosen for this purpose, but the capture of two deer changed this plan, and they struggled forward, now and then shooting a deer, now and then catching a sea-gull, and at times trying to fish. Ericksen was dying and had to be carried. On October 1st De Long writes: "My chart is simply useless. I must go on trusting in God to guide me to a settlement, for I have long since realized that we are powerless to help ourselves." On October 3d their last dog was killed for food, on the 6th Ericksen died, and "everybody is very weak," and on the 7th the record says, "No provisions left;" and on the 9th Nindemann and Noros were sent ahead to attempt to reach a settlement. Then De Long's diary has shorter entries, "Nothing for supper, but a spoonful of glycerine." October 14th, unable to move. October 12th, everybody getting weaker. 17th, Alexey died. Then comes the last page of the diary:

Friday, October 21st.

131st day—Kaack was found dead about midnight between the doctor and myself.

Lee died about noon.

Read prayers for sick when he found he was going.

Saturday, October 22d.

132d day—Too weak to carry the bodies of Lee and Kaack out on the ice. The doctor, Collins, and I carried them around the corner out of sight. Then my eye closed up.

Sunday, October 23d.

133d day—Everybody pretty weak. Slept or rested all day, and then managed to get enough wood in before dark. Read part of divine service. Suffering in our feet. No foot-gear.

Monday, October 24th.

134th day—A hard night.

Tuesday, October 25th.

135th day—

Wednesday, October 26th.

136th day—

Thursday, October 27th.

137th day—Iveson broken down.

Friday, October 28th,

138th day—Iveson died during early morning.

Saturday, October 29th.

139th day—Dressler died during night.

Sunday, Oct. 30th.

140th day—Boyd and Görtz died during night. Mr. Collins dying.

It is beyond the power of words to add to the pathos of these simple lines.

Nindemann and Noros, starting on Oct. 9th, were instructed to make a forced march to Ku-Mark-Surta for relief. They occasionally took refuge in huts, where they found scraps of decaying offal, but before the 15th of the month they were reduced to eating their seal-skin pantaloons and drinking willow tea. On the 19th they were so exhausted that they could scarcely move for five minutes at a time and dysentery attacked them; but, on the 19th, a native arrived at their camp, and soon others came in. Nindemann endeavored to explain to them that De Long's party was perishing twenty miles to the north, but the natives shook their heads and conveyed the two sailors to Ku-Mark-Surta. On the 27th a Russian appeared who placed them in charge of a man who was to take them to Belun. They gave him a note stating their condition, and on the 29th they arrived at Belun, and there, on November 2d, to their intense joy, Melville arrived, having received their note of the 29th. Melville could make himself understood in Russian, and the two sailors now had the best the place could afford.

We shall now follow Melville and the fortunes of the whale-boat.

After the whale-boat, under the command of Melville parted company with its consorts on the terrible night of September 12th, the course was laid about southwest for Cape Barkin, and the boat struck the coast line in the Bay of Borkhia, about twenty miles east of the cape. At dawn of the 16th, she was in shoal water and soon was well within the mouth of the Lena River. Here Melville hesitated whether he ought to go on, or direct his course to Cape Barkin in the chance of finding De Long and Chipp there. Danenhovner advised the latter course, but the men were evidently reluctant to risk another gale at sea, and the discovery of a deep channel induced them to push on up the river. Landings were occasionally made, and abandoned huts visited till at length three canoes with a native in each approached them. The meeting was a friendly one, and Melville with considerable difficulty, managed to explain to them his desire to reach Bolan. They would not however act as



pilots, and it was resolved "go it alone," but this attempt was unsuccessful and an old native, Vasili Kool Gar, was ultimately induced to guide the party. At length a village named Jawavelut was reached, and after renewed difficulties they entered Bolan where they met Noros and Nindemann. Now began the search for De Long. Mr. Danenhower was directed to take all the men to Yakutsk; Barkett, the fireman, remained at Belun and Melville himself set out northwest for Buruloch. At North Belun a native brought in a paper which proved to be a letter from De Long, dated April 22d, giving a brief account of the loss of the ship, and then another letter of the date of September 26th, was produced recording the arrival of De Long's party at a point about twelve miles from the head of the Lena Delta. The weather was remorseless, dogs and men all suffered, provisions were scarce and bad, and reindeer teams could not be procured, so nothing was left but to return to Belun, which was reached November 27th. On December 1st, Melville set off to Verkeransk, and passing that settlement, came to Yakutsk on December 30, 1881. Here the Russian governor and officials lent every assistance; and three interpreters, Captain Grönbeck, who had been with the Nordenskiöld expedition, Captain Babokoff, an exiled officer of cuirassiers, and Kolinkin, a Cossack sergeant, were engaged. On January 27th, Melville and Grönbeck started north again and on reaching Belun made arrangements for a systematic search. The weather was again terrible, too severe even for the natives and progress was almost impossible; indeed the party was storm-bound till March 14th.

Nindemann had by this time joined Melville, and recognized some of the features of the country, and under his directions a careful search began. On

March 23d a fire-bed with many foot-prints was discovered, and it was certain that the trail was found. As they proceeded to explore the banks of the river, they found some sticks protruding from the snow and in them a Remington rifle, and near the fire-bed the hand and arm of a body rose up out of the snow. Melville at once recognized De Long. He lay on his right side, with his hand under his cheek, his head to the north, and his face to the west. Four feet from him lay his note-book, where he had tossed it with his left hand, which looked as if it had been frozen stiff in the act. Near their chief lay Dr. Ambler and the Chinese cook Ah Sam. The bodies were piously removed, and Melville ascertained positively that the report of Dr. Ambler having committed suicide was false. Next day further exhumations were made, and the bodies of Boyd, Görtz, Ivesen, Collins, and Dressler recovered, and last of all Lee and Kaack, whom De Long had carried "round the corner" when he was too weak to bury them.

The burial ground chosen for the resting-place of these Arctic martyrs was a bold promontory overlooking the Polar Sea. A pit three feet deep was excavated, and in it the cairn coffin was placed, covered by a heavy lid, on which stood a cross twenty-five feet high with cross-arms twelve feet long.

Melville then began a search for the second cutter's party and Lieutenant Chipp, but no traces of the lost explorers were ever discovered.

So ended without any addition to useful knowledge, this hapless expedition, but it will be ever memorable for its display of calm endurance, true piety, and dauntless courage. The deaths of these heroes furnish a noble contrast to the experience of the following Arctic exploration.



## CHAPTER XV.

LIEUTENANT GREELY AND THE FRANKLIN BAY EXPEDITION—1881-1884.



LIEUTENANT GREELY.

CAPTAIN WEYPRECHT of the *Tegetthoff*, after his return to Germany, presented to the German Scientific Society a scheme for systematic Polar research, and his plan was laid before the International Meteorological Congress, during its meeting at Rome in the year 1879. In consequence of action then taken, an International Polar Congress met at Hamburg in October, 1879, and resolutions were passed recommending the establishment of twelve stations, four to be in the Antarctic regions and one in the Archipelago

of North America. This latter station, to be occupied by the United States Signal Service, was placed at Lady Franklin Bay, and Lieutenant A. W. Greely, of the Fifth Cavalry, was appointed chief of the expedition on March 11, 1881. The plan contemplated the transport of the expedition by steamer to Lady Franklin Bay, where it was to establish its winter quarters, and remain till visited in the following year. The *Proteus* was selected for the purpose of carrying the party to its destination from St. Johns, N. B., and on July 4th, with all on board, she turned her prow towards Greenland.

At the Danish settlement of Upernavik some dogs were taken on board, and, on August 11th, the ship rounded Cape Lieber, and found Lady Franklin Bay clear of ice. Here Lieutenant Greely landed at the "discovery winter quarters," where the English expedition of 1876 had left two copper cases labelled, "Records and General Information." Already there were signs of dissension in the expedition. Mr. Clay, a grandson of the great orator, left the party on the 16th, and Lieutenant Kislingborz begged to be relieved from duty on the 25th. The former returned to the United States in the *Proteus*, the latter was unable to join that ship, and, therefore, remained without returning to duty.

All hands were set to work building a house 60 feet long and 17 broad, with double walls, divided into three rooms, and to it was given the name of Fort Conger. As soon as this necessary work was completed, field work began, and several trips to the northward were made, with especial instructions to look for traces of the missing *Jeannette*. The information gained by these sledging parties led to the conclusion that travelling northward along Grinnell Land was rarely practicable in autumn. October 15 was the last day of sunlight, but it was determined to break the monotony of the winter by continuing the sledging parties, but after two or three had been dispatched the commander was satisfied that any advantages gained were not commensurate with the danger in the case of trips exceeding one or two days'



absence from headquarters. So, to pass the long dark night, a school was started, Lieut. Lockwood got out a semi-monthly paper *The Arctic Morn*, which, however, only ran through two numbers; and snow-shoe races, and rifle matches were organized. On December 10th a number of the men gave indication of being mentally affected by the continued darkness, even some of the Esquimaux tried to desert. Christmas and New Year's were celebrated in due fashion, and so the regular routine of Arctic life proceeded, scientific observations were made, temperatures recorded, and such phenomena as the aurora or the lunar halo noted and sketched. A storm which must have been the most violent for the previous six years visited them in January, but on February 28th the welcome sun again reappeared.

In anticipation of this day-dawn, Lieut. Lockwood had set out, February 19th, to visit Cape Beechy, and examine the ice in Reben's Channel, with a view to a trip to Thank-God Harbor. On March 3d we reached the observatory that had been erected in 1871 by Bes-sels, and made an inventory of the supplies that had been stored there. The grave of Captain Hall was found to be in good order, and in an adjoining cairn the records of the British expedition of 1875 were found. Lockwood pushed on to Newman Bay, and near Cape Sumner found the boats that had been left by the *Polaris*. The time occupied by this trip was ten days, and the distance travelled one hundred and thirty-five miles. As a result of the report made by Lockwood, Dr. Pavy was sent out to establish a depot near Cape Sumner, and he consequently placed the stock of supplies that he carried in a break in the coast which was designated The Gap, and thither, a few days later, Sergeant Brainard transferred the *Polaris* boat. The temperature during this trip averaged 40°, and the weather was favorable.

On March 19th, Dr. Pavy was sent northward in an attempt to reach land north of Cape Joseph Henry, and left Fort Conger March 19th. The remains of the English depot of 1875 was to be his base of operations; on the 24th, he was at Mount Parry, and in the following days was engaged moving supplies to Black Cape. On April 11th he reached the *Alert* winter quarters, and from the lookout there, as far as he could see, the pack consisted of rough and hum-mocky ice. The doctor determined not to cross Feilden Peninsula, but to follow the coast to Cape Joseph Henry, and on the 20th, he succeeded in transporting his stores to a point about four miles north of that headland; and thence proceeded in the direction of Cape Hecla in order to establish another depot.

On the 23d, however, "water" was announced by one of the Esquimaux, and it became evident that the polar pack was becoming disintegrated, and that the situation would be critical if any gale arose. Dr. Pavy at once returned to Cape Joseph Henry, abandoning his tent, provisions, and part of his scientific instruments, and taking only provisions enough to enable the party to reach Harley Spit. This spot they reached on the 24th, and on the 26th, were again in the snow-house at Black Cape, and finally reached Fort Conger on May 2d.

Lieutenant Greely had long been convinced that the interior of Grinnell Land could be explored successfully, and, on April 26th, he set out in person to make the attempt. In his field journal he writes, under date of the 29th:

"To-day's discoveries change Conybeare Bay into a fiord (Chandler Fiord). It is quite certain that the site of Camp No. 3, where the two valleys united, is that which was thought to be the end of the bay by Lieutenant Archer's party. This is evident, not only from the appearance of the country from Stony Cape, which conveyed the same impression to me, but also from the bearings given on his map. Archer Fiord to the southward of Miller Island was completely shut off by the south side of Conybeare Bay, just after leaving Camp No. 3, so that the greater part of to-day's travel has been over a part of the fiord which could not possibly have been seen by Lieutenant Archer. The arm of the fiord opens to the north, a direction to an observing eye from the eastward, the most unlikely. This arm, about five miles at its southern extremity, narrows gradually to three miles at our present camp. On the eastern side the cliffs are continuous—sheer precipices—save occasional breaks, or notches, which are in no manner practicable. The general elevation is never less than one thousand, and sometimes as great as fifteen hundred, feet. On the west side the cliffs, while attaining a general elevation of about two thousand feet (decreasing gradually from three thousand feet at Promontory Point to fifteen hundred at our present camp), have occasional gorges of no great size, which never attain to the dignity of ravines. Possibly at one gorge they could be scaled, but it would be decidedly hazardous. Our journey of twenty-one miles is a remarkable day's travel, which never could have been made except by reason of the extraordinary condition of the ice. I have worked all day in the drag-ropes, except during the time taken for some eight miles extra travel, and am quite worn out this morning from lack of sleep through pain in my left foot, caused by breaking



through the snow, covering a tidal crack, into the sharp-pointed ice beneath, while pulling heavily. The instep appears to be badly bruised, and I suffer much from it to-day, although at the time it did not appear to be so serious, I regretted to break in on Connell's sleep, after a long march, but I felt the necessity of getting both latitude and time sights at this point."

At the head of Chandler Fiord a fresh-water river descends from the interior, and this river-ice was level and smooth, affording excellent travelling, and the explorers could hear the noise of the water flowing below it, till on the 30th they came to the open stream about fifty yards wide. Travelling along its bordering ice-walls, the explorers came to an immense ice-bound lake, and beyond it a snow-clad range of hills. The lake was named Lake Hazen, the range of hills, the Garfield Range; and the river the Ruggles River. Here some ptarmigan and hares were shot, musk oxen were in sight, and fish, six or seven inches in length, were discovered in the lake. On May 2d, they came in sight of a large glacier, which was named Henrietta Nesmith, after Mrs. Greely; its vertical front was about one hundred and fifty feet high, and its breadth, from hill to hill, about five miles.

"The top of it was pure, dead-white, densely opaque, resembling in a marked manner the surface of loaf sugar, or broken and unpolished white marble. Lower down it shaded into a color bordering on blue, the whole very much resembling floe-bergs. In general the color of the ice, which lay in detached piles at the foot, was a delicate blue, shading closely on the white, but in certain places strata of a faint yellowish color were to be seen. These strata were irregularly confined to certain points, and formed a very inconsiderable portion of the visible front. Their color, while in the glacier itself, gave the appearance of a delicately-tinted rose-shade, which, as I have said, changed to a faint yellowish on close examination. There were three large deeply-worn gullies or channels on the surface of the glacier, one at the centre and one near each side, which showed that in the summer and autumn very considerable streams of water must be discharged from the surface of the glacier. The side gullies were of inconsiderable size compared with the central one. The lowest part of the crown of the glacier was at a point where water of the largest discharging channel had worn deeply into the ice, leaving its elevation not more than a hundred feet.

"This sledge journey was an exceedingly fruitful one

in its results. It disclosed physical conditions in the interior of Grinnell Land hitherto unsuspected. The absence of discharging glaciers which had excited remark on account of the extreme latitude of Grinnell Land was now explained by the discovery of a broken, rugged country, intersected by a system of fiords and lakes which readily drains, during the short Arctic summer, the inconsiderable snow-fall. The valleys, bare of snow, give birth to vegetation, luxuriant for the latitude, which serves as pasturage for considerable game. The presence of the glaciers, bursting through the Garfield Range, proved the existence of an ice-cap on the northern part of Grinnell Land, and inferentially a radically different topography from the country in the vicinity of Discovery Harbor and Lake Hazen."

While these journeys were being made, Lieut. Lockwood was dispatched to explore the North Greenland coast. The party proceeded to Cape Sumner, and the Discovery Boat Camp, encountering violent storms, and on April 16th started from the latter place for the north with three hundred rations. The journey was painfully laborious, the men complained of sleeping cold, the sleeping bags being frozen stiff. At Heaton Gorge, on April 26th, they found the depot left by the English explorer Beaumont, and next day reached Cape Bryant. Here Cape Britannia was clearly visible, and here the supporting party terminated their journey. On the 29th, Lockwood, accompanied by Brainard and Christansen turned his face northward over the frozen sea. He travelled direct for Cape Britannia, and on May 3d reached that point, while on May 7th they were at Lew Point, in latitude equal to that of the most northerly land ever before reached; and on the 11th they encamped on Mary Murray Island, where a gale delayed them for sixty-three hours. The last march is thus described by Lieutenant Lockwood:

"Started at 1.45 A.M., after building a small cairn near-by. The North Cape of Wild Fiord disappeared from view shortly after starting, but the travelling was very good near shore over 'Blue-Top Floe,' and at 3.45 A.M. the cape was reached. Here, and along the line of cliffs beyond which it terminates, immense masses of bergs and hummocks were pressed so closely to the foot of the cliffs that it was necessary to get outside on the floe. A tortuous way was found to the top of this ice-wall, and the sledge then lowered, by means of the traces, some fifteen feet or more. For some distance we worked our way slowly through a mass of rubble-ice, with the constant use of the axe, and crossed two or three small lanes of



water; and beyond travelled for a few hundred yards on a 'clear' floe of last year's ice, when at 5.30-6.15 A.M., we were stopped by another lead or lane of water. The sun being discernible, I took an observation, and at the same time sent Frederik to find a crossing. (This crossing, says Sergeant Brainard, was dangerous, owing to thin and rotten ice.) One being found, we continued over a floe of last year's ice, at quite a rapid gait, on a line generally parallel to the cliffs. Presently, the weather clearing, a large, wide inlet (Weyprecht Inlet), with the cliffs and mountains

back to the southeast, and forming the eastern side of the inlet. A little to the right of the island referred to is another (Brainard Island), apparently of a cone shape. The land to their rear towered up to an enormous height, and formed a mountain, certainly not less than four thousand feet in height, completely dwarfing the islands and cliffs beneath. The tide-crack, which we were now on the outside of, ran in a great curve between the two capes at the extremities of the inlet, and was marked by a wall of ice-hummocks. Inside was a level surface of snow, covering



FORT CONGER, LADY FRANKLIN BAY.

on its farther side, opened up to view, forming a grand panorama, the most remarkable yet observed. To the right oblique the line of cliffs ended in a cape, from which the coast turned abruptly to the south, and then ran in a curve toward the southeast, forming the western shore of the inlet. Directly ahead was a pyramid-shaped island (Lockwood Island) of considerable altitude, which seemed to touch the line of cliffs back of it, which ran almost north and south, ending in a cape (Cape Kane) to the northeast of our position, and on the other hand gradually curving

a floe which extended from shore to shore, and outside alternate masses of rubble and smooth floes of last year's ice."

Ten hours' work carried them only sixteen miles, and, worn out by travel through deep snow, they made their farthest camp at the north end of Lockwood Island, which, by circum-meridian and sub-polar observations reduced by Gauss' method, was determined to be in  $83^{\circ} 23' 8''$  N., the highest latitude ever attained by man.

Of this event Sergeant Brainard's field notes say:



"We have reached a higher latitude than ever before reached by mortal man, and, on a land farther north than was supposed by many to exist, we unfurled the glorious Stars and Stripes to the exhilarating northern breezes with an exultation impossible to describe."

For three centuries England had held the honors of the farthest north. The latitude of Hudson,  $80^{\circ} 23'$  in 1607, gave way to Phipps, who reached  $80^{\circ} 48' N.$  in 1773. Scoresby, the elder, in 1806, reached  $81^{\circ} 12' 42'' N.$ ; and twenty-one years later came Parry's memorable journey, which he reached  $82^{\circ} 45'$ . These latitudes were all attained in the Greenland Sea. Inglefield opened to the world the Smith Sound route, and in 1871, Meyer reached  $82^{\circ} 09'$ , the highest on land, and Payer, a year later, almost equalled Meyer by his sledge journey to Cape Fligely ( $82^{\circ} 07'$ ) Franz Josef Land. In 1876 Alrich surpassed Parry's famous latitude, and reached Cape Columbia  $83^{\circ} 07' N.$ , only to be surpassed on sea a few weeks later, by Markham,  $83^{\circ} 20' 26'' N.$ , during that journey over the Great Frozen Sea in which such energy, persistency, and courage were exhibited by the officers and men of the Royal Navy.

Now Lockwood, profiting by the labors and experiences of this "kin across the sea," surpassed their efforts of three centuries by land and ocean. And with Lockwood's name should be associated that of his inseparable sledge-companion, Brainard, without whose efficient aid and restless energy, as Lockwood said, the work could not have been accomplished.

So, with proper pride, they looked that day from their vantage ground of the farthest north (Lockwood Island) to the desolate cape which, until surpassed in coming ages, may well bear the grand name of Washington."

June opened at Fort Conger with the return of Lieutenant Lockwood, and at the end of the month Greely again set out for Grinnell Land, leaving the fort on June 24th with four companions. On the second day, Greely notes, that the country opened into a fine level valley covered in the main by a very considerable quantity of grass, with many young willows, and soon was surrounded by a system of small lakes which drained into Lake Hazen. On the 28th he stood at the spot where the Ruggles River flows from the lake, where numerous abandoned Esquimaux huts were discovered, herds of musk oxen were sighted, and terns and ducks flew along the open water. Several rivers were passed, and the vegetation was very rank on the margins of the streams and lakes, but as they advanced snow was frequently

met with, and on July 4th they started to ascend a high mountain a few miles to the southwest. This is by barometrical measurement fifty feet above the highest peak of the Victoria Range ascended by Lieutenant Lockwood, and was named Mount C. A. Arthur. He was now in the west of Grinnell Land, and thus writes in his journal:

"The whole country seems spread out before me as on a map. A second chain of mountains (Conger Mountains) is seen extending to the westward as the prolongation of the Garfield Range. They are separated by a break of eight or ten miles from Mount Whisler, which is the most westerly of the Garfield chain. Northward of the Conger and Garfield ranges are a confused mass of hog-back mountains, all entirely snow-clad, which I include in the designation of United States Mountains. The valley northward of Mount Whisler extends to the eastward about half-way to the Henrietta Nesmith Glacier, and from that point to the eastward the rest of the Garfield Range is crowded closely against the United States Mountains, evidently being the only obstacle which prevents the glacial ice-cap from overflowing the country to the southward. The overlapping, rounded tops of ice-clad mountains can be distinguished for at least twenty miles to the northeastward beyond Henrietta Nesmith Glacier, which must be nearly forty miles distant itself.

"To the westward the valley between the Conger and United States mountains opens out or widens in that direction. The mountains themselves, after extending a great distance, trend gradually to the northwestward, probably terminating in the Challenger Range of Aldrich.

"With the following exceptions, there is visible as far as the eye can reach, say fifty miles, only low, rounded hills intersected with numerous ravines, which, outside of a radius of ten to fifteen miles from Mount Arthur, are generally bare of snow. By low hills are meant those from fifteen hundred to twenty-five hundred feet high. Did not the country, in all directions, resemble to the eye that which I had just travelled over from Lake Hazen, I might think it a plateau country, as was supposed by Lieut. Archer. The most important exception is from the west-southwest to southwest, where a depression in the hills discloses a range of partly snow-clad mountains, distant not less than, and perhaps much over, seventy-five miles. I cannot but think this depression drains the western country into a channel or strait between the near hills and the distant mountains, and that the range is situated on a separate land."



The north and south ends of the range were cut off from view by the hills, but it cannot in any way be joined to the Conger Range. Again, due southward was seen, about forty miles distant, a prominent mountain rising sharply on its eastern point and showing a flat top, which extended westward and gradually (perhaps from perspective) merged into the low hill.

In the southeast there was a prominent peak, with a few illy-defined snow-clad mountains, evidently the western slope of the Victoria and Albert Range.

After hoisting the flag at the summit of Mount Arthur, the party descended into the valley of the Very River, where the vegetation was luxuriant, and arrived at Fort Conger with nothing more than the usual difficulties. The ice had now broken up, a walrus was seen on July 22d, and a strong gale left open water to the south. Boats were launched, and one of them proceeded to Cape Lieber in the hope of seeing the relief-steamer. But no trace of her could be seen, and on August 25th, all hope of her arrival was given up. The non-arrival of the expected steamer cast a gloom on the party, and it was with depressed spirits that they began the second winter. Still greater discouragement was caused by the report of the surgeon, Dr. Pavy, respecting the prospects of health during the coming year, and by his imprudent talk to the men. Hence it was with dissatisfaction, if not with disaffection, that Greely had to contend. All the recommendations of the medical officer were carried out, the quarters were warmer, dryer, and more comfortable than before, and the health of all was better. The spring of 1883 brought a sense of relief, and all looked forward to a brief period of spring sledging, to be followed by the relieving vessel, or a retreat southward in the boats. In March Lockwood again made some trips to the northward, but in April was dispatched to cross Grinnell Land by the way of Archer Fiord, and on the 23d, he started with two sledges and rations for thirty days. At Depot Point he sent back one of the sledges, and finally reached the head of Ella Bay, where he went into camp. The cliffs about this spot were grand, at least three thousand feet high. Following a little stream in one of these Arctic cañons he arrived at Lake Katherine, and the view up the valley was closed by a glacier two hundred feet high and a mile across. This glacier wall was at the top of a charming green color, then came a white surface, and at the foot was an undulating bank of snow. On May 2d he retraced his steps to Ella Bay, and thence took a straight course to Beatrix Bay. The main valley route was

chosen, but it, too, closed with a high cliff. Lockwood ascended one of the highest points, and thence descended into Markox valley, the apparent end of which was reached the following day. Crossing the water-shed of Grinnell Land he descended to salt water at the head of Greely Fiord where the last glacier discharged. This fiord is between sixty and eighty miles long and from ten to fifteen wide, the whole shore bounded by steep, high cliffs. On May 16th, the party started homeward, and three marches brought them back to Beatrix Bay, whence Fort Conger was reached May 26th.

Lockwood writes in his journal: "No such word as 'failed' to write this time, I am thankful to say, but the happy reflection is mine that I accomplished more than anyone expected and more than I myself dared hope—the discovery of the western sea, and hence the western coast-line of Grinnell Land. I have now the rather ponderous task of preparing a report, making a map, and writing out this journal from my notes. Tidal observations have been taken at Capes Baird, Distant, and Beechy, simultaneously, showing that the tides arrive at these places in the order named. This is very singular, as the previous expeditions into these parts established (?) the tides as coming from the north. This agrees, however, with the order of their arrival at Cape Sumner, Gap Valley, and Black Horn Cliffs, where I took observations in April. No more musk-ox meat left; it ran out on the 20th inst., and hunting-parties sent out April 25th saw nothing. I surmised as much, from the absence of game on my trip, though Brainard did not agree with me. Two seals have been shot, but only one secured."

The next entry reveals a lamentable state of affairs:

"I find the social relations of our room not improved—rather worse than better. Dr. Pavy, though he shook hands and asked me several questions as to my trip, relapsed into silence, which he seldom breaks. Lieutenant K. had but question to ask. I often contrast ours with the pleasant relations of the English officers when here, and think how much happier we should be in following their example. As it is, I soon relapse into *ennui* and apathy. A sledge-journey, with all its trials, is preferable to this. I view those ahead of us with indifference, as it will rid me of this forced association; another winter would render me a maniac or put me under a cairn." Other entries give indications of growing disorganization among the explorers. "What a change," he writes on the 3d of June, "if we ever return home! And how much



to talk about, and how much to hear! Just two years ago, I left Baltimore on the *Nova Scotia*, to join the *Proteus* at St. John's. Open water is reported in the straits near Cape Baird. How eagerly we watch for any change that may effect our release!"

On the 22d of June, a party was sent up the Bel-lows for game and returned successful, having killed eight musk oxen, one seal, and a few geese, all of which were duly brought in. Many waterfowl and ptarmigans were brought from other points; and then followed a grand dinner in honor of Dr. Pavy's birthday. To show the social relations of the officers, Lockwood says, "The only remark at dinner was a very sage one by myself, viz., that the sun was now on his way south, to which Lieutenant Greely assented.

"The men all busy and cheerful. Lieutenant Greely remarked that it did not look as if the 'gloom which their coming fate cast over the spirits of the men' was quite as deep as Lieutenant Kislingbury thought it to be." "Another day gone," wrote Lockwood, "another day nearer the end of our stay here! A miserable, gloomy day it is, too. Snow, or snow mixed with rain, all day, and last night it blew a gale from the right direction to clear away the ice—north-east. I think myself now in excellent condition for a hermit's life, having had two years' experience of a life not very dissimilar."

Dr. Pavy indeed seemed to be especially dissatisfied, and refused to renew his engagement which had expired, and all the medical stores, journals, and collections were turned over to Lockwood. It was then found that Pavy had paid no proper attention to this work; the specimens had not been preserved nor due note made concerning them. On July 20 Pavy refused to obey orders and had to be placed in arrest, and, though every consideration was shown, he broke his parole.

Meanwhile, all preparations for the retreat were made, and orders were issued that the station would be abandoned on August 8, if no ship appeared. The 5th of August arrived, and the ship was the only thing talked about. Some of the men reported smoke down the straits, but it was soon found to be only water-clouds or fog. In the midst of these excitements, Lockwood gave expression to the following feelings: "As the time for moving approaches, I feel a singular apathy. If we had plenty of fresh meat and more good books, I could stand another winter here."

Soon after, heavy winds from the south making

great changes in the condition of the ice, active preparations were made for leaving.

Lockwood writes: "I don't feel as though I was going away, much less toward the south. Have felt more stirred up on beginning a sledge-journey."

On August 9th, Greely enters in his journal: "At 10 A. M. I ordered the formal abandonment of the station at 1 P. M., hoping to leave by 2 P. M., when an ebbing tide will favor our passage." The stores they could not carry, such as coal, their collections and most of their food were placed in house and protected from the weather. The hope of the party was to reach Littleton Island, where they hoped to find a vessel that would take them back to Newfoundland. They reached Cape Lieber on the 11th, and thence, amid fogs, snowstorms, and floating ice, they struggled on to Rawling's Bay. Near Scoresby Bay the pack-ice checked their progress, and pressed the boat against the ice-foot. "The season is late," Greely writes, "our coal nearly gone, and food entirely uncertain." On the 26th they passed Cape Louis Napoleon, and next day reached Cape Hawks, where the English depot was situated. Unfortunately these provisions were almost all uneatable, and in less desperate circumstances would have been rejected. On September 3d a breach of discipline on the part of Lieutenant Kislingbury induced Greely to consult with his officers. Pavy and Kislingbury suggested that the launch should be abandoned; but to this the majority disagreed. Another meeting was held September 9th, when Greely notified them that he would start next morning, by sledge, for Cocked Hat Island, and thence press on to Cape Sabine. The party had now been beset for fifteen days, the young ice was steadily forming, and it was, to quote Greely's words, "time for abandoning the policy of patient waiting, for that of energetic action." On the 11th another council was held, but no decision was arrived at, except to abandon the whale-boat. The labor was of the most arduous character, and all worked with the energy of despair. On the 14th Dr. Pavy again exhibited mutinous conduct, which had to be overlooked; on the 19th Greely writes: "A wretched, wretched day!" with more wrangling with the doctor and Lieutenant Kislingbury, but still, after fifty-one days of exhaustive toil, the whole party continued their route towards Cape Sabine, where the land is fairly stocked with game. On October 6th arrangements were made for building, out of stones and ice, the necessary huts for protection during the coming winter, should it be their fate to remain there. While this work was progressing, it was decided that the



daily rations would have to be reduced. Lockwood expressed the opinion that they had only three chances for their lives: first, the chance of finding an American *cache* at Cape Sabine; secondly, a chance of crossing the straits, here thirty-five miles wide, when their provisions were gone; thirdly, the chance of being able to kill enough game for their support during the winter. A second effort was made by Rice and a party to reach Cape Sabine, which was successful. They returned with the news of the loss of the *Proteus*, on July 24th; and that Lieutenant

ber would supply but one poor light; cold, dampness, darkness, and hunger were the portion of all, every day and all day. Hunger, perhaps, affected all of them most severely. Lockwood writes: "Occupied, like a dog, in scraping the place where the mouldy biscuits were emptied. Found a few crumbs, ate mould and all." On the 31st October Lockwood writes: "God, what a life! A few crumbs of hard bread taste delicious. I spend much of my time thinking of bills of fare." An expedition was sent to Cape Isabella to bring in one hundred and forty pounds of



DESERTION OF THE BOATS AT LADY FRANKLIN BAY.

Garlington had gone south in hopes of meeting the *Yantic* or some steamer. The record left by this relief party decided Greely to proceed to Cape Sabine and await the promised help. On October 18th, however, they began work on their winter quarters on Bedford Pym Island, and a party was sent to the cape to bring up as much clothing as was possible from the depot left there. On the 26th the sun once more sank below the horizon, and the Arctic night of one hundred and ten long days began. Rations were again reduced to one-third of what was necessary, the blub-

meat left by English explorers, but nearly ended in the death of the party who were rescued by Lockwood, after what Greely calls "the most remarkable journey in the annals of Arctic sledging." From the 1st of November onward the record is one of horror and misery. Half of the party were unfit for duty; thefts were detected, one of them committed by Dr. Pavy; accusations of unfairness in dividing the rations were made, yet when Christmas Day came round they celebrated with songs and good wishes. But with the New Year more thieving began. Lockwood



seemed out of his head, Cross showed symptoms of scurvy, and died January 18th; Bender and Henry were insubordinate. Yet, during all this time of agony, Greely and others endeavored to beguile the dreary time by talks on the history of their country, their adventures abroad, or even by dulling their listeners with tables of chronology, or lectures on physiology. On February 1st, Rice was sent to cross Smith Sound to Littleton Island, where they hoped the rescuing party was, but they returned unsuccessful on the 6th. Again we read of violent scenes between Pavy and Kislingbury, and Pavy and Bender and Schneider, of misunderstandings between Greely and Lockwood, in fact, of growing demoralization. In March, Greely writes: "The fates seem against us—an open channel, no game, no food, no hopes from Littleton Island. To die is easy; it is only hard to strive, to endure, to live." On March 21st he exhorts his comrades to die like men; and on the 24th another theft was detected. The guilty man was Henry; and, although the majority of his comrades deemed him guilty, Greely spared him. On the 26th a ray of sunlight disclosed such a scene of utter squalor and misery that Greely exclaimed, "How have we ever passed through this hell on earth and kept our reason?" In April the end was evidently approaching. On the 5th one of the Esquimaux died; on the 6th Lyon died; on the 7th Rice died; and on the 9th Lieutenant Lockwood passed away. On the 14th Kislingbury exhibited signs of mental derangement; Greely himself was ill. In May a mutiny seemed imminent, and on May 22d, it is recorded, "It is now eight days since the last regular food was issued." All discipline was now at an end. Kislingbury died in the early days of June, and on the 6th inst. Private C. B. Henry was executed for continued thefts. On the same day Dr. Pavy died, then Gardiner died; and the last entry in Greely's diary is: "21st—It commenced snowing. Connell's legs paralyzed from knee down. Brederick suffering terribly from rheumatism. Buchanan Strait open this noon a long way up the coast."

On the 22d. they were all exhausted, but about midnight the sound of a steam-whistle was heard. The whistle was blown by the *Thetis*, a vessel sent out to search for the long-lost party.

According to the original plan drawn up when the Greely expedition set out on the *Proteus* in 1881, a ship, the *Neptune*, was dispatched in the following year, but was unable to reach Fort Conger, and returned without leaving any stores for the Greely party. In 1883 the *Proteus* and the *Yantic* both failed to leave provisions although they reached a point beyond that

where Greely's men were left to perish. The terrible position in which this failure left the isolated band appalled all thinking men, and in the spring of 1884, a safe fleet of vessels was sent out. The Government bought two Scotch whalers, the *Bear* and the *Thetis*, and the Queen refitted and tendered as a gift to the United States, the *Alert*, the old flag-ship of Captain Nares in 1874, and the strongest wooden ship afloat. The command of this rescuing fleet was given to Commander Schley, and Melville, of the *Jeannette's* crew, under the hapless De Long, accompanied the expedition as engineer of the *Thetis*. This ship sailed from New York on May 1st, and proceeded with all speed to the Northern seas. It was a race between the Government ships and the whalers, for Congress had offered a prize of \$25,000 to any vessel that succeeded in rescuing the explorers. The *Thetis* beat the others in the race and arrived at Cape York on June the 18th. At Breevort Island a landing party discovered some records left by the Greely party dated September 22, 1883, stating that they had gone into camp near Cape Sabine, "Twenty-five men, all well." A party was at once dispatched to the spot indicated, and by this time the screeching of the steam-whistles had roused the unfortunates, and Brainard, Frederik, and Long, the strongest among them, tottered down to the rocky promontory to look for relief. But they saw nothing and returned filled with despair, but Long returned to the rock to take another look and his eyes were gladdened by the sight of the steam cutter. He tried to raise a signal of distress but was too weak, but the men on the cutter had seen him, and ran inshore, while Long rolled and scrambled towards them, clamoring for food. He told them his comrades were over the hill, and that only seven survived, among them Greely. The ice-pilot Norman leaped ashore and rushed up the hill to the tent.

"Greely are you there? How do you get in?"

"Is that you, Mr. Norman?" replied Greely.

"Yes it is, you are all right now, succor has come."

The scene that presented itself was indescribable. A cold, barren plateau, a black rock where even mosses could not grow, drifts of snow in the ravines, and a raging wind and pitiless sea, not a living thing in sight except the skeleton-like survivors. We quote Melville's description:

"Struggling up the valley of death against the frantic wind, from the low point to the westward of the camp, where we managed with difficulty to effect a landing in our whale-boats, we first came upon the remains of the winter habitation, a parallelogram



of four walls about three feet high built of loose stone, the inside dimensions being 18 x 22 feet, with a tunnel or covered way facing the mountain to the southward. The hut had been roofed over with the whale-boats turned upside down and covered with the sails and tent-cloths; the smoke-flue, made of old tin kettles bound with bits of canvas, was thrown to one side; and water had risen in and about the wretched dwelling-place to a height of eight inches, concealing much of the foul evidences of squalid misery in which its poor occupants had lived. Cast-off fur and cloth clothing, empty tin cans, and the sickening filth of twenty-five men for nine months, lay heaped and scattered about—a veritable Augean scene. Continuing up the valley toward a little rise of ground, we passed the dead body of a man laid out on a projecting plane of rock. A woolen cap was pulled down over his face, his hands were crossed on his breast, and his clothing and blankets were fastened around him with old straps and shreds of rope or yarns. Further up the hill lay the summer camp or tent, black with smoke and partly blown down, the flaps flying in the wind, which was blowing loose papers, leaves of books, and old clothing hither and thither; and on their backs within this half-open inclosure lay the poor creatures whom we had come to rescue now more dead than alive.

"Greely, in his sleeping-bag, and resting on his hands and knees, was peering out through the open doorway; his hair and beard black, long and matted, his hands and face begrimed with the soot of months, and his eyes glittering with an intense excitement. For what terrible days of agony had been swept into oblivion by this supreme moment of joy. Succor had come at last! And yet he scarcely seemed to realize it. Mr. Norman told him who I was and he said he was glad to see one of the people of the *Jeannette*, for he had learned a great deal of the history of our expedition from scraps of newspapers that had been wrapped around some lemons left by the

Garlington party. Alongside of him lay a man on his back, Sergeant Ellison, to whom he introduced me, and who said he would like to shake hands with me, but his hands and feet were both frozen off. I looked down and saw that his nose was likewise



AT LADY FRANKLIN BAY—THE RELIEF.

gone. Yet he seemed cheerful and bright, and coolly discussed his sorrowful plight, thrusting one of his arm stumps, which I shook in lieu of a hand. Higher up and beyond the tent was the burial-ground, where ten bodies lay in a row, some barely covered



with loose earth and stones. The first grave, or one nearest the northern crest of the hill, had been very carefully made, for it was that of Sergeant Cross, the first man to die, and the survivors were then still strong enough to endure exertion. To the southward, or toward the face of the mountain, the graves became more and more shallow, just as the strength of the party was waning. All the faces were covered with woolen hoods and cloths or handkerchiefs; and each body was stretched out on its back with the hands crossed on the breast and the clothing bound round. Only one corpse was found unburied, that of Private Henry; but the six that had been interred in the ice-foot, were, of course, beyond recovery.

"In the camp all was bustle and confusion. One man, Connell, was to all appearance lifeless, his face was fixed in death; he was cold from the hips down; and he scarcely breathed. Three days before he had eaten his last ration of seal-skin, and, abandoning all hope, had calmly determined to die. Doctors Green and Ames had their hands full of work. Water-kettles were heated, and the clothes being stripped from the half-dead Connell, he was wrapped in a blanket dipped in hot water. A little brandy was then poured down his throat, but it ran out at the side of his mouth until, catching his breath, he drew in sufficient to choke him and blew out the rest. Yet the few drops he retained sufficed to revive him, and rolling his head to one side he said wearily, "Let me die in peace." Not realizing that succor had arrived, he thought his comrades were still laboring with him. However, he survived and still lives. He was a vivacious sort of man, and when on board the *Thetis* a few days remarked, "Well, boys. it was a pretty close squeeze for me. Death had me by the heels, and you pulled me out by the back of the neck."

Stretchers were brought from the ship, and the survivors carried to the steam-cutter and then transferred to the *Thetis*, all save Frederik and Long, who, as hunters for the party, had been allowed additional rations from the game procured, to maintain their strength for the extra exertion demanded of them. The camp was devoid of all food except a few pounds of boiled seal-skin strips, contained in tin cans. The final division of this food had been made some days before, and each man had charge of his own meagre supply. Considerable wood, including about four feet of the bows of the light boat still remained as fuel; and the bodies of two ducks just killed, and one as yet untouched, were found at the old winter hut.

The faces of two of the men were so swollen that they could scarcely see, and the rheum and slime had gathered in their eyes and half-blinded them. They were too weak to help themselves, and dipping an old woolen sack in warm water, I cleansed the eyes of one who lay upon his back gazing dimly in the direction where our mastheads could be seen across the rocks.

Commander Schley stood by and said:

"My man, don't you see the ship's masts? Don't you see the flags?" for we had mastheaded our colors.

"Please lift me up a little," he urged, huskily, "that I may see." Then, catching sight of the colors, he cried, "Hooray! There is the old flag again; now, boys, we'll get some mush." And he did his best to raise a feeble cheer, while tears of joy ran down his cheeks as we supported him in his sleeping-bag.

When I shook poor Ellison by the stump, he said:

"So you are one of the officers from the *Jeannette*, and poor De Long is dead. You must have had a terrible time."

Here was sympathy sure enough. A man with nose, feet, and hands frozen off, who for months had been helplessly stretched upon his back, enduring every agony and horror but death itself, could nevertheless find room in his bleeding heart to pity the past sufferings of others. A noble nature, indeed. He it was who sacrificed himself on the expedition to Cape Isabella for the English beef, when Sergeant Rice perished.

It was after midnight of June 22d before we finished our sad duty of removing all the dead and living, together with the books and papers and certain relics, from Camp Clay to our two vessels; and we then sought shelter from the gale under the lee of Brevoort Island. The next morning saw both ships moored together at Payer Harbor; but when the fury of the wind had abated, Captain Schley sent back in the *Bear* a party of officers and men selected from both companies to go over the ground more carefully at Camp Clay, and gather up all overlooked articles that might be of value either as mementoes or a part of the history of the expedition."

The bodies of the dead were transferred to the *Thetis*, and a piece of numbered canvas sewn on each. She then proceeded on her voyage homeward, and reached Portsmouth, N. H., July 26th, where the cruise of the rescue ships virtually ended.



## CHAPTER XVI.

NANSEN—1884; AND PEARY—1891.



THE failure of so many expeditions which have sought to effect a northwest or northeast passage from ocean to ocean within the Arctic Circle has suggested more earnest and perhaps more practical methods. Instead of pushing up ice-blocked straits and forcing their way through ever-moving floes, late explorers have turned their attention to the immense continent of Greenland, and resolved to explore it thoroughly with a view to making it a base of operations for the Pole. Dr. Nansen in 1882 was on board a Norwegian sealer which was caught in the ice off the east coast of Greenland, and he became impressed with the idea that it would be practicable to reach over the floes a coast deemed impenetrable. He at once perceived that the "ski" or snowshoe would enable a small party of explorers landing on the floes of the east coast to go across the snowfields and reach the Danish settlements. The plan was proposed in scientific journals, and finally carried out with financial aid from Augustin Gamel, the patron of the expedition. Dr. Nansen had five

companions in his march across the floes—three Norwegians and two Lapps—all having been accustomed from youth to the use of the snowshoe. The leader himself had been from childhood an expert "skilober" (snowshoe-runner), and he based his prospects of success in crossing Greenland almost entirely upon the superiority of this means of locomotion when large tracts of snow had to be traversed. These snowshoes are strips of wood, eight feet long and an inch thick under the foot, beveling off to a quarter of an inch at each end. In front these sticks are curved upward, and pointed, and sometimes at the back end also. The attachment consists of a loop made of leather for the toe, and a band passing round behind

the heel. Shoe and foot are made as rigid as possible for steering purposes, while the heel is allowed to rise freely at all times. On flat ground the ski are driven forward by a peculiar stride, there being no resemblance to the motion employed in skating. With the snow in good condition eight or nine miles can be made within the hour, while an average of seven miles an hour can be maintained for long periods. On the slope of almost any gradient these snow-sticks can be employed most effectively, an ascent being made either by feather-stitching or tacking, and the safety of the descent being dependent upon the facility of keeping the balance.

The equipment of this Arctic expedition was simple but scientific. The explorer originally intended to take either dogs or reindeer to drag the baggage on the land march, but he found it to be impracticable to get the animals, and was compelled to depend upon men alone. Care was taken to have everything which was to be carried as light as possible and to reduce food, implements and clothing to a minimum



of weight. The sledges were similar to that used by the rescue party in the Greely expedition, being made of picked ash and provided with broad runners turned up at each end and with a bow at the back which could be used for pushing and steering. There were five sledges, one for each man, the first one on the march being usually drawn by two men. In order to convert the sledges into sailing craft it was only necessary to lash them side by side and to raise bamboo staffs for masts, with the floor of the tent and two tarpaulins for sails. The "ski" or snow-sticks were supplemented by Indian snowshoes and Norwegian "trugers." Only one boat was taken—about nineteen feet long, with runners of pine added to the keel to support it while it was being hauled over the ice. There were two sleeping-bags of reindeer and doe-skin—each holding three men. The clothing to be worn was selected with painstaking care. The tent weighed eighteen pounds. The alcohol "cooker" was patterned after one used by Greely. The provisions consisted largely of dried articles of food. A daily ration for a man weighed about two pounds and a quarter, comprising dried meat, fatty food, bread or biscuit, pea soup, peptonized meat, chocolate and sugar. To these supplies were added two double-barrelled guns with ammunition, scientific instruments, a camera, and a small stock of tools. Four of the sledges when fully loaded averaged 200 pounds, while the fifth was nearly double as much.

The east coast of Greenland was reached by means of a Norwegian sealer, on which the party of six embarked in Iceland on June 4, 1888. The condition of the ice did not admit of an attempt to approach Greenland until July 17. Then the sealer was left behind and the six explorers set out for the shore, with their baggage, in two boats—one their own and the other borrowed from the ship. The first attempt to reach land by open lanes through the floes was not successful, and for many days the explorers, with their sledges, boats, and tent, were compelled to drift with the ice, passing from the 66th to the 62d parallel. On July 29, the floe carried them to the inner edge of the ice-belt and enabled them to reach the shore by a long stretch of smooth water. Thence they headed northward for the 64th parallel, where they were to begin their land journey at a point directly opposite the Danish settlement of Godthaab. On their way up the coast they came suddenly upon two East Greenlanders—little men dressed in sealskins, with no covering for the head except a few strings of beads. A day or two afterward they received an Esquimaux welcome at a large encampment of these

strange people. A most interesting account of the habits and traits of these Pagan Esquimaux is given by the author in a chapter which is an important contribution to the science of sociology. Various settlements were passed on the journey northward to the last station on the east coast. Then preparations were deliberately made for the land expedition. The start for the west coast was made on August 15th, after the boats had been hauled on shore and abandoned. The destination was reached early in October. The crossing of the inland ice, is described in Dr. Nansen's narrative in detail, but is necessarily a monotonous recital. In the crossing of that icy desert there could be few incidents. One day was like another—the same unbroken level of snow, shut in by the gray horizon line opening morning and evening before the jaded eyes of the traveller. The perilous stages of the journey were the ascent and descent of the ice-cap from each coast, but with a perfect equipment and with the remarkable adaptability of the "ski" for ice travel, the work of the expedition was accomplished with facility and dispatch.

Within the last few weeks another expedition for Greenland has left our shores under the command of Lieutenant Peary, of the U. S. Navy.

They are likely to reach Whale Sound rather earlier than most of the expeditions to those waters. No obstacles have ever been encountered to prevent a well-equipped vessel from reaching Whale Sound, and with fair fortune the party will probably arrive at the site of their winter quarters about the 15th to the 20th of July. The Greely party reached Littleton Island, further north, on August 2d, only twenty-six days from St. Johns. Baffin, who was the first explorer in this region, arrived at Smith Sound earlier in the season than any of his successors except the rescuers of the Greely expedition.

As an American is about to introduce a new idea in North Greenland exploration, it was, perhaps, particularly appropriate that Whale Sound, which is to be his base of operations, was discovered by Baffin on July 4th during his memorable voyage of 1616. Passing through this Sound, whose name was suggested to Baffin by the many whales he saw there, Lieutenant Peary will probably erect the house in which he will spend the coming winter at the deep indentation on the northern shore, near the entrance to Inglefield Gulf. This shore, as shown on Hayes's chart, is bordered by mountains, and if Peary is able to realize his hopes he will climb one of these giant hills, carrying his sledges and loads on the backs of



the party, and step from near its top to the surface of the great ice plateau which is to be his highway to the far north.

Almost within sight of Whale Sound are the waters where the *Proteus* was crushed in the pack, and where Kane and Hayes battled inch by inch with the ice to gain some vantage ground for an advance to new discoveries. Peary will at least be spared this dangerous and trying phase of Arctic effort. The level ice plain, not the treacherous ice-packed sea, is to be his highway. It matters not how deep the snow, for he is an experienced snow traveller, and snowshoes are of the first importance in his enterprise. "I regard this deep, soft snow, which stopped Nordenskiöld," he writes, "not as a *bête noir*, but as the perfection of roads."

In the little cabin which will shelter his party next winter, about one hundred and twenty days of darkness or twilight will be spent. Their friends at home may think of them then with considerable confidence as passing the long winter night under fairly comfortable conditions. Everything which past Arctic experience suggests as contributing to comfort and safety, has been included in the equipment. The party will have plenty of fresh meat, for game abounds along that coast, and the hunters will lay in a supply in the fall. Only a little way further north Hayes's sportsmen in October shot seventy-four reindeer, twenty-one foxes, twelve hares, and a seal, besides a large number of geese and other aquatic birds. Lieutenant Peary has a most encouraging prospect for an abundant commissariat, and the chances are the long Arctic night will not be a cheerless and unhappy period. With plenty of food, clothing, and books, and abundant opportunities for exercise in a particularly bracing atmosphere, it will be surprising if these young and vigorous people do not hail the rising sun next spring in abundant health and spirits, and eager to enter upon the arduous work before them. That was the experience of the Hayes party, who passed the winter at Port Foulke under somewhat similar conditions.

The party will not be wholly cut off from their kind. Their winter house will be midway on that part of the coast which is inhabited by the Arctic highlanders. We shall be glad to hear again of these simple, harmless people, who have shown many a kindness to explorers. It is not unlikely that Kane's party would have perished during their two winters in Smith Sound if they had not now and then obtained bear meat, seal, and walrus from the good-natured natives seventy miles south of their ice-im-

prisoned brig. There is reason to believe that Lieutenant Peary will have opportunities to collect more accurate and exhaustive information about these Smith Sound Esquimaux than our present Arctic literature contains.

The main purpose of Lieutenant Peary's enterprise has already been well discussed. While it is useless to speculate upon the chances of his being able to reach and map the extreme north coast of Greenland, using the inland ice as a highway, it may be said that the idea he originated has commended itself to men whose opinions are entitled to respect. The enthusiastic explorer himself does not underrate the arduous nature of his task. Even if Greenland extends only a little way beyond Lockwood's furthest point, Peary has before him a round trip journey of about 1,200 miles. Just as Nansen travelled, now over a hard crust, and then through deep, soft snow, Peary is likely at times to find sledge hauling very hard work. General Greely believes that the inland ice is not co-terminous with the north coast of Greenland; and, if this theory is correct, Peary will hardly be able to reach the north coast by the route he proposes, for he and his comrades could not travel far overland packing their provisions on their backs.

While Peary's proposed attempt, like all Arctic enterprises, is experimental and problematical, it is certain that his scheme eliminates the gravest sources of danger and causes of defeat that have confronted all previous expeditions to North Greenland. Whether or not his enterprise is completely successful, it is believed he will return with additions to knowledge that will be welcomed by men of science and will repay his enthusiastic and untiring labors. His countrymen appreciate the high qualities that Lieutenant Peary brings to his great undertaking. They will follow his enterprise with sympathetic interest, and will hope that this able and modest young man may win the laurels as an Arctic explorer which, there is no doubt, his efforts will merit, whether fortune smiles on him or not.

After the sledging campaign is over, Lieutenant Peary and his party will probably return to the South Greenland settlements in their boats. It is a long and an unpleasant journey, but has been successfully accomplished by all who have undertaken it, from Kane to Garlington.

The immediate party with Lieutenant Peary, aside from himself and his wife, consists of Dr. Coak, Professor Astrop, John M. Verhoef, Matthew Henson, and Lieutenant Peary's colored valet.

May they return in safety and with success!



## ANTARCTIC EXPLORATIONS.

---



THE illustrious Cook, whose name is inseparably connected with our knowledge of the Pacific and Southern Oceans, and of Australia and New Zealand, was the first explorer sent out to the Antarctic Circle. On July 13, 1772, he sailed from Plymouth with two ships the *Adventure* and the *Resolution*, on a three years' cruise, charged to discover how far the lands of the Antarctic stretched to the south. His furthest South point was  $71^{\circ} 10'$ , Longitude  $110^{\circ} 54' W.$ , where he was stopped by impenetrable masses of ice, and he was led to the conclusion that lands beyond this point would forever remain unknown.

We may pass by as of little importance Smith's discovery or re-discovery of the South Shetland Islands, and of the Russian expedition which reached

Alexander Island in  $69^{\circ} 3'$  South Latitude, to briefly mention the voyage of Captain Weddell, in 1822, who reached  $74^{\circ} 15'$  S. Lat. In 1831 Biscoe discovered Enderly Land, and, in 1839, Ballevy reached Sabrina Island in  $69^{\circ}$  S. Lat.

The reports of these hardy navigators stimulated the natural curiosity of the world as to the condition of the vast expanse of sea that surrounds the Southern Pole, and three expeditions were planned for a systematic exploration of this unknown ocean.

The most important of these voyages are those made by the United States Exploring Expedition under Commodore Wilkes, and of the English expedition under Sir James Ross. These we shall now proceed to describe.



## CHAPTER XVII.

CAPTAIN WILKES—1840.

AN act of the United States Congress, in 1836, authorized an expedition to be fitted out to explore and survey the great Southern Ocean, and in 1838 instructions were issued by the Navy Department to Commander Wilkes, and the *Vincennes*, of 780 tons; the *Peacock*, of 650 tons; the *Porpoise*, of 32 tons; and two tenders—the *Seagull*, of 110 tons, and the *Flying Fish*, of 96 tons—were placed under his orders. The instructions given to Captain Wilkes directed him to proceed to Terra del Fuego, and thence as far as Cook's Furthest, returning to the Pacific and the northwest coast of America. Thence they were ordered to proceed to Japan, and so homeward.

Towards the end of 1839, Wilkes was at Sydney, New South Wales, and on December 26th, the height of the Antarctic summer, the ships weighed anchor and stood out to sea, and until December 31st, had fine weather and favorable winds.

The first of January, 1840, was one of those days which are termed, both at sea and on shore, a weather-breeder; and on the morning of the 2d of January the fog was dense and the *Peacock* and *Porpoise* only were in sight. The 10th they encountered the first iceberg, and the temperature of the water fell to 32°. They passed close to it, and found it a mile long, and one hundred and eight feet in height. The second iceberg seen was thirty miles, and the third about fifty-five miles south of the first. These ice-lands were apparently much worn by the sea into cavities, and showed an apparent stratification, which inclined to the horizon. The weather now became misty, with occasionally a little snow. They continued to meet icebergs of different heights, some of which, though inclined to the horizon, had a plain upper surface. Commodore Wilkes writes:

"The fair wind from the northwest (accompanied with a light mist rendering objects on the horizon indistinct) still enabled us to pursue our course southerly. Icebergs became so numerous as to compel us occasionally to change our course. They continued of the same character, with caverns worn in their perpendicular sides, and with flat tops, but the latter were now on a line with the horizon. Towards 6 P. M. of the 11th, we began to perceive

smaller pieces of ice, some of which were not more than the eighth of a mile in length, floating as it were in small patches. As the icebergs increased in number, the sea became smoother, and there was no apparent motion. Between 8 and 9 P. M., a low point of ice was perceived ahead, and in a short time we passed within it. There was now a large bay before us. As the vessels moved rapidly, at 10.30 P. M. we had reached its extreme limits, and found our further progress entirely stopped by a compact barrier of ice, enclosing large, square icebergs. The barrier consisted of masses closely packed and of every variety of shape and size. We had now reached the Latitude of 64° 11' S., Longitude 164° 30' E., and found our variation twenty-two degrees easterly. One and all felt disappointed, for we had flattered ourselves that the way was open for further progress to the southward, and imbibed the impression that the season would be an open one. What surprised me most was a change in the color of the water to an olive-green, and some faint appearances resembling distant land; but as it was twilight, and I did not believe the thing credible, I put no faith in these indications, although some of the officers were confident they were not occasioned by icebergs. The barometer at 29.200 in.; the temperature of the air 33°, water 32°. We lay-to until four o'clock. As it grew light on the 12th, a fog set in so thick that we lost sight of the *Porpoise* and could not hear any answer to our signals. I therefore determined to work along the barrier to the westward.

"We were all day beating in a thick fog, with the barrier of ice close to us, and occasionally in tacking brought it under our bow; at other times we were almost in contact with icebergs. During the whole day we could not see at any time further than a quarter of a mile, and seldom more than the ship's length. The fog or rather thick mist, was forming in ice on our rigging. From the novelty of our situation and the excitement produced by it, we did not think of the danger.

"I shall now leave the *Vincennes* and *Porpoise* pursuing their course to the westward with a head-wind, and bring the *Peacock* up to the barrier. Pre-



viously to parting company on the 3d of January, the crew of that ship had also been engaged in building hurricane houses. After parting company Captain Hudson immediately steered for the first rendezvous, Macquarie Island, and was more fortunate in reaching it than we were, although the *Peacock* had experienced the same kind of weather that we had, and currents setting to the eastward.

"On approaching the island they discovered large patches of kelp, and saw numerous albatrosses about the ship. On the 10th of January they made the island, and observed a reef of rocks extending three-quarters of a mile off its south end. Passing within a short distance of it, they did not observe any of the signals of the squadron flying as they had anticipated. They, notwithstanding, stood in, lowered a boat, and despatched several officers to put up the signal, make experiments, and collect specimens. The boat approached an indentation on the west side, too open to be called a bay, and found that the surf was running high, and beating with great violence against the rocks, which, together with the kelp, rendered it dangerous to attempt landing.

"They made for several other places which looked favorable at a distance, but on approaching them they were found even less accessible. The boat then returned to the first place to make another attempt, which was attended with great difficulty. The boat's anchor was dropped, and she was backed in with great caution to the edge of the rollers; the surf was very high, and rolled in with a noise like thunder, breaking furiously upon the rocks, so as to make the boat fairly tremble, and threatening every moment to overwhelm her; once or twice she was prevented from getting broadside to by hauling out towards her anchor.

"At length, after a dozen fruitless attempts, and awaiting a favorable opportunity Mr. Eld and a quartermaster succeeded in getting ashore, but not without being immersed up to their breasts. It was found impossible to land any instruments, and the quartermaster was despatched to erect the necessary signals, while Mr. Eld proceeded to visit the penguin rookery not far distant. On approaching the island it had appeared to be covered with white spots: these excited conjecture; but after landing, the exhalations rendered it not long doubtful that it was bird-lime.

"On the 16th the three vessels were in longitude  $157^{\circ} 46' E.$ , and all within a short distance of each other. The water was much discolored and many albatrosses, Cape pigeons, and petrels were seen about the ships. On board the *Vincennes*, we sounded

with two hundred and thirty fathoms, and found no bottom; the water had the appearance of an olive-green color, as if but forty or fifty fathoms deep.

"On this day (16th January), appearances believed at the time to be land were visible from all the three ships, and the comparison of the three observations when taken in connection with the more positive proofs of its existence afterwards obtained, has left no doubt that the appearance was not deceptive. From this day, therefore, we date the discovery which is claimed for the squadron.

"On board the *Peacock* it appears that Passed Midshipmen Eld and Reynolds both saw the land from the masthead, and reported it to Captain Hudson. He was well satisfied on examination, and a majority of the officers and men were also satisfied that, if land could exist, that was it.

"I mention particularly the names of these two gentlemen because they have stated the same fact under oath before the court-martial, after our return.

"On board the *Porpoise*, Lieutenant-Commander Ringgold states that "he went aloft in the afternoon, the weather being clear and fine, the horizon good, and clouds lofty; that he saw over the field-ice an object large, dark, and rounding, resembling a mountain in the distance; the icebergs were all light and brilliant, and in great contrast." He goes on to say in his report, "I watched for an hour to see if the sun, in his decline, would change the color of the object. It remained the same, with a white cloud above similar to that hovering over high land. At sunset the appearance remained the same. I took the bearings accurately, intending to examine it closely as soon as we got a breeze. I am thoroughly of opinion it is an island surrounded by immense fields of ice. The *Peacock* in sight to the southward and eastward over the ice; the sun set at a few minutes before ten; soon after a light air from the southward, with a fog-bank arising which quickly shut out the field-ice." In Passed Midshipman Eld's journal he asserts that he had been several times to the masthead during the day to view the barrier; that it was not only a barrier of ice, but one of *terra firma*. Passed Midshipman Reynolds and himself exclaimed, with one accord, that it was land. Not trusting to the naked eye, they descended for spy-glasses, which confirmed beyond a doubt their first impression. The mountains could be distinctly seen over the field-ice and bergs stretching to the southwest as far as anything could be discerned. Two peaks in particular were very distinct (which I have named after these two officers), rising in a conical form; and others, the lower parts of which

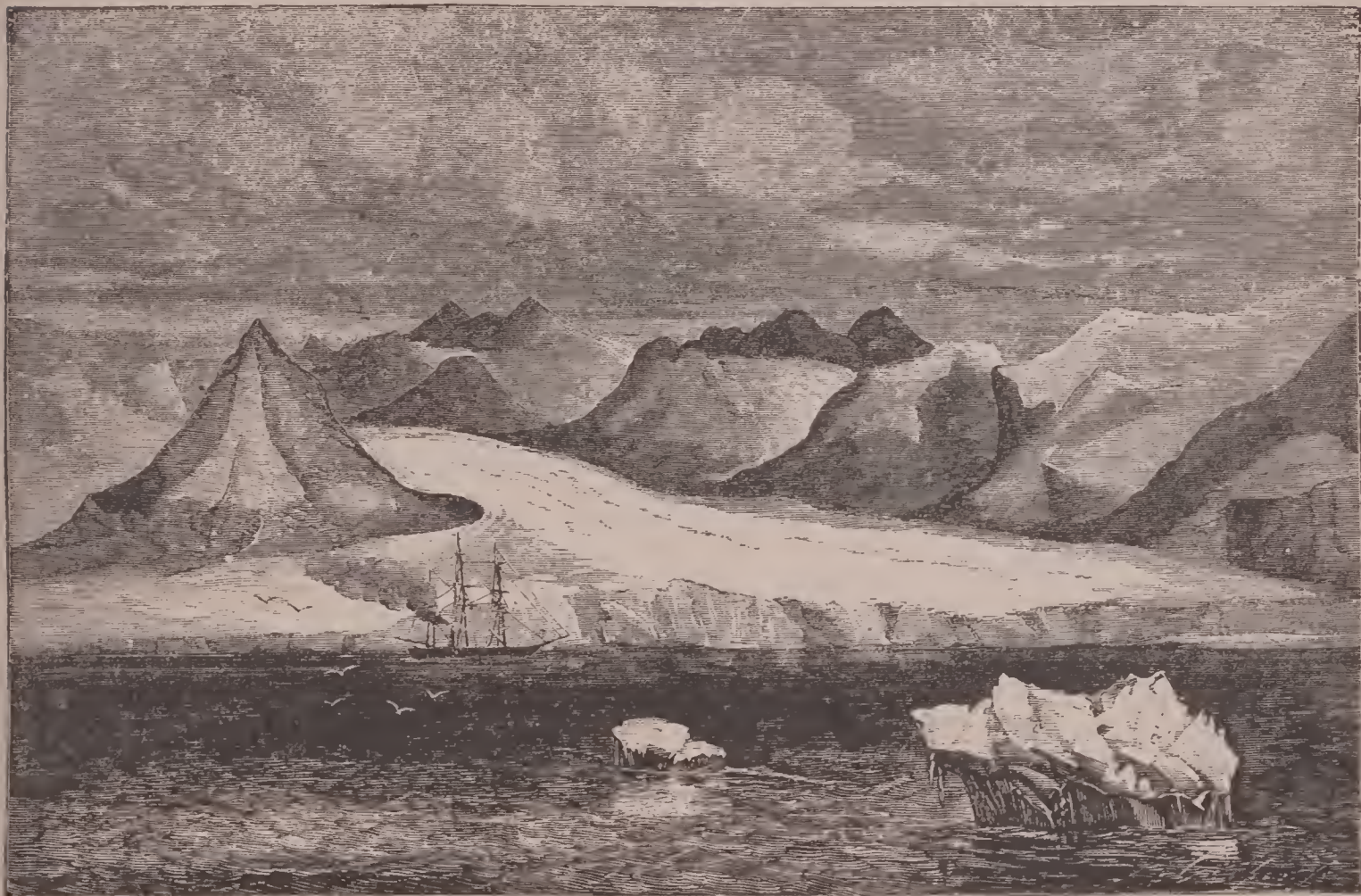


were quite as distinct, but whose summits were lost in light fleecy clouds. Few clouds were to be seen in any other direction for the weather was remarkably clear.

"The sun shone brightly on ridge after ridge, whose sides were partially bare; these connected the eminences I have just spoken of, which must be from one to two thousand feet high. Mr. Eld further states, that, on reporting the discovery to Captain Hudson, the latter replied that there was no doubt of it, and that he believed that most of the icebergs then in

much excitement among the crew. All eagerly watched the flight of birds, together with the whales and penguins, and spoke of the proximity of land, which, from the appearance of never-failing signs, could scarcely be doubted.

"The field-ice is composed of a vast number of pieces, varying in size and separated from one another, the long swell keeping the outer ones always in motion. The smallest pieces are about six feet in diameter, whilst the largest sometimes exceeded five or six hundred feet. Their depth below the surface



A GLACIER IN THE FROZEN OCEAN.

sight were aground. At this time they were close in with the barrier, and could approach no nearer.

"The log-book of the *Porpoise* has also this notice in it: 'From six to eight calm and pleasant; took in studding sails; at seven set main-top-gallant studding sail; discovered what we took to be an island, bearing south by east; a great deal of field-ice in sight; noticed penguins around the brig. (Signed) J. H. NORTH.' Dr. Holmes, on the same evening, noted in his journal a marked appearance of land.

"On board the *Vincennes* there was on the same day

varies still more and some appear to be soft, while others were hard and compact. The depth of these does not probably in any case exceed twenty feet. Most of them, and particularly the larger ones, had a covering of about eighteen inches of snow. The whole at a distance appeared like a vast level field, broken up as it were by the plough, and presenting shapeless angular masses of every possible figure, while here and there a table-topped iceberg was enclosed.

"This night we were beating with frequent tacks, in



order to gain as much southing as possible. Previous to its becoming broad daylight, the fog rendered everything obscure, even at a short distance from the ship. I knew that we were in close proximity to icebergs and field-ice, but, from the report of the lookout at sunset, believed that there was an opening or large bay leading to the southward. The ship had rapid way on her, and was much tossed about, when in an instant all was perfectly still and quiet; the transition was so sudden that many were awakened by it from sound sleep, and all well knew, from the short experience we had had, that the cessation of the sound and motion usual at sea, was proof that we had run within a line of ice—an occurrence from which the feeling of great danger is inseparable. The watch was called by the officer of the deck to be in readiness to execute such orders as might be necessary for the safety of the ship. Many of those from below were seen hurrying up the hatches, and those on deck straining their eyes to discover the barrier in time to avoid accident. The ship still moving rapidly along, some faint hope remained that the bay might prove a deep one, and enable me to satisfy my sanguine hopes and belief relative to the land.

"The feeling is awful, and the uncertainty most trying, thus to enter within the icy barrier, blindfolded as it were by an imperceptible fog, and the thought constantly recurring that both ship and crew were in imminent danger; yet I was satisfied that nothing could be gained but by pursuing this course.

"On we kept, until it was reported to me by attentive listeners, that they heard the low and distant rustling of the ice; suddenly a dozen voices proclaimed the barrier to be in sight, just ahead. The ship, which a moment before seemed to be unpeopled from the stillness of all on board, was instantly alive with the bustle of performing the evolutions necessary to bring her to the wind, which was unfavorable to a return on the same track by which we had entered. After a quarter of an hour, the ice was again made ahead, and the full danger of our situation was realized. The ship was certainly embayed; and, although the extent of sea-room to which we were limited was rendered invisible by the dark and murky weather, yet that we were closely circumscribed was evident from having made the ice so soon on either tack, and from the audible rustling around us. It required several hours to extricate the ship from this bay.

"As the events which occurred on board the *Peacock* during the next few days are particularly interesting, I shall proceed to narrate them in detail, leaving the

*Vincennes* and *Porpoise* to pursue their route along their dangerous and novel pathway.

"The *Peacock* stood into the bay which the *Vincennes* had found closed the day before, and saw the same appearance of high land in the distance. The water was much discolored, and of a dark, dirty green. They hove-to for the double purpose of getting a cast of the lead, and of lowering the boats to carry the instruments to a small iceberg on which it was possible to land, for the purpose of making magnetic observations. A line of one thousand four hundred fathoms was prepared to sound, and to the lead was attached a cylinder with Six's thermometer. The wind being fresh several leads at different distances were attached to the line. They were not aware that the lead-line had lead bent on at five hundred fathoms and it was filled with blue and slate-colored mud. Attached to the lead also was a piece of stone, and a fresh bruise on it, as though the lead had struck heavily on rock.

"The remainder of the line had evidently lain on the bottom, as the copper cylinder was covered with mud, and the water inside of it was quite muddy. They then beat up a short distance to windward, and again sounded, when, with the line hanging vertically, bottom was reached at three hundred and twenty fathoms; the matter brought up was slate-colored mud. The temperature of the water at the surface was  $32^{\circ}$ , and at the above depth  $27\frac{1}{2}^{\circ}$ , being a decrease of  $4\frac{1}{2}^{\circ}$ .

The boats now returned, and on approaching the ship the persons in them were much startled by hearing the crew cheer in consequence of finding soundings. This was a natural burst of joy, on obtaining this unquestionable proof that what they saw was, indeed, the land; a circumstance that, while it left no doubt, if any had existed in the mind of anyone on board the *Peacock*, that what they had previously seen was truly *terra firma*, furnished a proof that cannot be gainsayed, even by those disposed to dispute the evidence of sight, unsupported by so decisive a fact. Mr. Eld and Mr. Stuart, in the boats, succeeded in getting observations, and the mean dip by the needles was  $86^{\circ} 16'$ ."

We have quoted the words of Captain Wilkes and his brother officers respecting this discovery of land, or rather of an Antarctic continent, and resume our quotations from Captain Wilkes's report on January 28th, when he found himself surrounded by icebergs:

"Towards midnight the wind shifted to the south-east, and enabled me to haul more to the southward. At 9.30 A. M. we had another sight of the land ahead and every prospect of nearing it, with a fine breeze



The sight of the icebergs around us, all of large dimensions, was beautiful. The greatest number in sight at one time was noted, and found to be more than a hundred, varying from a quarter of a mile to three miles in length. We took the most open route, and by 11 o'clock had run upwards of forty miles through them. We had the land now in plain view, but the weather soon began to thicken and the breeze to freshen. At noon it was so thick that everything was hidden, and no observation was obtained. The ship was hove-to, but shortly after again put under way making several tacks to keep my position, which I felt was becoming a critical one in case a gale should ensue. I, therefore, looked carefully over my chart, and was surprised at the vast number of icebergs that appeared upon it.

"At 2 P. M. the barometer began to fall, and the weather to change for the worse. At 5 P. M. a gale was evidently coming on, so we took three reefs in the topsails. It appeared now that certain wreck would ensue, should we remain where we were; and, after much consideration, I made up my mind to retrace my way, and seek the open space forty miles distant, taking for a landmark a remarkable berg that had been the last entered on the chart, and which would be a guide to my course out. I therefore stood for its position. The weather was so thick that it was necessary to run close to it, to be quite sure of recognizing it, for on this seemed to depend our safety. About the estimated time we would take to pass over the distance, an iceberg was made (we were within one thousand feet of it), which, at first view, I felt confident was the one sought, but was not altogether satisfied afterwards. I therefore again consulted my chart, and became more doubtful of it. Just at that moment I was called on deck by an officer, who informed me there were icebergs a short distance ahead. Such proved to be the case; our path was beset with them, and it was evident we could not regain our route. To return was worse, so, having but little choice left, I determined to keep on. To encounter these icebergs so soon after seeing the other, was in some respects satisfactory, for it removed all doubts, and showed me we were so near the track by which we entered. Nothing, therefore, was to be done but to keep a good lookout and the ship under sufficient way to steer well. My safest plan was to keep as near our former track as possible, believing it to be most free of these masses. On the morning of the 30th the sun rose in great brilliancy, and the scene was altogether unlike that we had passed through only twenty-four hours before.

All was now quiet, a brisk breeze blew from the eastward, all sail was set, and there was every prospect that we might accomplish our object; for the land was in sight and the icebergs seemed floating in quiet. We wound our way through them in a sea so smooth that a yawl might have passed over it in safety. No straight line could have been drawn from us in any direction that would not have cut a dozen icebergs in the same number of miles, and the wondering exclamations of the officers and crew were oft repeated—'How could we have passed through them unharmed?' and 'What a lucky ship!' At 8 o'clock we had reached the icy barrier, and hove-to close to it. It was tantalizing with the land in sight, to be again and again blocked out. Open water was seen near the land to the southwest of us, and a tortuous channel through the broken ice to leeward apparently leading to it. All sail was immediately crowded; we passed rapidly through, and found ourselves again in clear water, which reached to the shores; the barrier extending in a line with our course, about two miles to windward, and a clear channel to the northwest, about two miles wide, as far as the eye could reach. Seeing this, I remarked to one of the officers that it would have been a good place to drift in during the last gale—little thinking that in a few short hours it would serve us for that purpose in still greater need. A brisk gale ensued, and the ship ran at the rate of nine or ten miles an hour; one reef was taken in the topsails, and we stood directly in for the most southerly part of the bay.

"This bay was formed partly by rocks and partly by ice-islands. The latter were aground, and on the western side of the bay extended about five miles to the northward of our position. While we stood on in this direction the gale increased, and our room became so circumscribed that we had not time on any one tack to reduce our canvass before it became necessary to go about. In this way we approached within half a mile of the dark volcanic rocks, which appeared on both sides of us; and saw the land gradually rising beyond the ice to the height of three thousand feet, and entirely covered with snow. It could be distinctly seen extending away to the south and west of our position, fully sixty miles. I make this bay in Longitude  $140^{\circ} 2' 30''$  E., Latitude  $66^{\circ} 45'$  S.; and now that all were convinced of its existence, I gave the land the name of the Antarctic Continent. Some of the officers pointed out the appearance of smoke, as if from a volcano, but I was of opinion that this was nothing but the snow-drift caused by the heavy squalls. There was too much



wind at this time to tack, I, therefore, had recourse to luffing the vessel up in the wind, and wore her short round on her heel. At the same time we sounded, and found a hard bottom at the depth of no more than thirty fathoms. I have called this bay Piner's Bay, after the signal quartermaster of that name. It was impossible to lower a boat or to remain longer; indeed, I felt it imperative on me to clear its confined space before the floating ice might close it up. At 10.30 A.M. we had gone round, and in an hour more we had cleared the bay. At noon the wind had increased to a gale, and by 1 o'clock P. M. we were reduced to storm sails, with our top-gallant yards on deck. The barometer had again declined rapidly, proving a true indicator, but giving little or no warning. To run the gauntlet again among the icebergs was out of the question, for a large quantity of field-ice would have to be passed through, which must have done us considerable damage, if it did not entirely disable us. The clear space we occupied was retained until five or six o'clock, when I found the floe-ice was coming down upon us. I then determined to lay the ship for a fair drift through the channel I had observed in the morning, and which I had every reason to believe, from the wind (southeast) blowing directly through it would not be obstructed until the floe-ice came down. It was a consolation to know that, if we were compelled to drift, we should do so faster than the ice. I, therefore, thought it as well to avoid it as long as possible.

"Another reason determined me to delay the drifting to the latest moment, I did not believe that the extent of the channel we had seen in the morning was more than ten miles, and at the rate we drifted the end of it would be reached long before the gale was over. This, like the former gale, was an old-fashioned snow-storm. All the canvas we could show to it at one time was a close-reefed maintopsail and fore storm-sail. It blew tremendously, and the sea we experienced was a short, disagreeable one, but nothing to be compared to that which accompanied the first gale. From the shortness of the sea I inferred that we had some current. This state of things continued for several hours, during which we every moment expected to reach the end of our channel. Since the last gale the whole crew, officers and men, had been put in watch and watch, ready for an instantaneous call, and prepared for rapid movements. The snow was of the same sleety or cutting character as that of the previous day, and seemed as if armed with sharp icicles or needles. The 31st brought no moderation of the weather. At 1 A. M. a

group of ice-islands was reported, and shortly afterwards field-ice close under our lee. We wore ship instantly, and just avoided coming in contact with the latter. Sail was immediately made on the ship and the scene of the former gale gone through with this exception that we were now passing to and fro among icebergs immediately to windward of the barrier and each tack brought us nearer to it. Between 4 and 5 A. M. our space was becoming confined, and there was no abatement of the gale; I therefore, as it had cleared sufficiently to enable us to see a quarter of a mile, determined to bear up and run off north-northwest for a clear sea. In doing this we passed icebergs of all dimensions and heavy floe-ice. By 8.30 A. M. we had run thirty miles, when, finding a more open sea, I judged we had partially cleared the ice. At noon the gale still continued. The lowest reading of the barometer during this gale was 28.59 in. After lasting thirty hours, the gale, at 6 P. M., began to moderate a little, when we again made sail to the southward. I now felt inclined to seek Piner's Bay again, in order to effect a landing. This would have been a great personal gratification; but the bay was sixty miles distant, so that to revisit it would occupy time that was now precious; and feeling satisfied that a great tract of land wholly unknown lay to the westward, I deemed it my duty to proceed to its discovery. Not doubting that if my opinions of its existence were correct, a place equally feasible for landing would be found."

On January 31st, the medical officers of the expedition report to Captain Wilkes that the condition of the crew was such that a few days more of such exposure would imperil the ship and the lives of all aboard, and with this report the majority of the officers agreed, but Wilkes resolved to persevere in his task till it was impossible to persist any longer. He, therefore, ordered sail to be made and steered southward with the land in sight, but the barrier along which they were sailing prevented any nearer approach. February opened with unsettled weather, and for ten days they continued running along the perpendicular ice barrier about one hundred and fifty feet high beyond which the outline of the high land could be distinguished. On the 9th they came in 125° 19' E. and 65.8. S, and on the 10th the barrier seemed more broken and there was an indistinct appearance of land to the southward.

During the 12th we had pleasant weather, and at 2 A.M. filled away. At 8 A. M. land was reported to the southwest. Keeping along the barrier and increasing our latitude, I again had hopes of getting near the



and. We passed through great quantities of large floe-ice until 1 P. M. when the solid barrier prevented our further progress. Land was now distinctly seen, from eighteen to twenty miles distant bearing from south-southeast to southwest—a lofty mountain range covered with snow, though showing many ridges and indentations. I laid the ship to for three hours, in hopes of discovering some opening or movement in the ice, but none was experienced. I tried the current and found none. The water was of a dirty dark green. We sounded with the wire line in two hundred and fifty fathoms, and found no bottom. The temperature at that depth was  $30\frac{1}{2}^{\circ}$ , of the air  $31^{\circ}$ .

We kept steadily along the ice-barrier until we had decreased our Longitude to  $112^{\circ} 16' 12''$  E., while our Latitude was  $64^{\circ} 57'$  S. This puts the land in about  $65^{\circ} 20'$  S, and its trending nearly east and west. The line of the icy barrier was generally uniform, although it was occasionally pierced with deep bays. We saw some icebergs with decided spots of earth upon them, which gave me hopes of yet obtaining the object of my wishes. The water was remarkably smooth during this day and the weather clear, enabling us to see a great distance. Two hours after we bore away, we left the floe-ice, and entered a clear sea to the westward, when we lost sight of the barrier for a time; but in hauling up to the southwest, it was, by 8 P. M., within three miles of us when we again kept off parallel to its trending. The appearance of land still continued. Shortly after, I hove-to, for the purpose of awaiting the daylight to continue our observations of the land with little prospect or probability of reaching it, from the immense quantity of ice which continued to form an impenetrable barrier.

13th.—At 2 A. M. we made sail to the southwest, in order to close with the barrier, which we found retreated in that direction, and gave us every prospect of getting nearer to it. Our course was, for the most part, through icebergs of tabular form. In the afternoon we had the land ahead and stood in for it with a light breeze until 6 P. M., when I judged it to be ten or twelve miles distant. It was very distinct, and extended from west-southwest to south-southeast. We were now in Longitude  $160^{\circ} 40'$  E., and Latitude  $65^{\circ} 57'$  S.: the variation was  $54^{\circ} 30'$  westerly. The water was very green. We sounded in three hundred fathoms, and found no bottom. The weather having an unsettled appearance we stood off to seek a clearer space for the night. The land left was high, rounded, and covered with snow, resembling that first

discovered, and had the appearance of being bound by perpendicular icy cliffs.

14th.—At daylight we again made sail for the land, beating in for it until 11 A. M., when we found any further progress quite impossible. I then judged it was seven or eight miles distant. The day was remarkably clear, and the land very distant. By measurement we made the extent of coast of the Antarctic Continent, which was then in sight, seventy-five miles, and by approximate measurement three thousand feet high. It was entirely covered with snow. Longitude at noon  $106^{\circ} 18' 42''$  E., Latitude  $65^{\circ} 59' 40''$  S., variation  $57^{\circ} 5'$  westerly. On running in we had passed several icebergs greatly discolored with earth, and finding we could not approach the shore any nearer, I determined to land on the larger ice-island that seemed accessible to it, to make dip, intensity, and variation observations. On coming up with it about one and a half miles from where the barrier had stopped us, I hove the ship to, lowered the boats, and fortunately effected a landing. We found embedded in it in places boulders, stones, gravel, sand, and mud or clay. The larger specimens were of red sandstone and basalt. No signs of stratification were to be seen in it, but it was in places formed of icy conglomeration (if I may use the expression) composed of large pieces of rocks, as it were, frozen together, and the ice was extremely hard and flint-like. The largest boulder embedded in it was about five or six feet in diameter, but being situated under the shelf of the iceberg, we were not able to get at it. Many specimens were obtained, and it was amusing to see the eagerness and desire of all hands to possess themselves of a piece of the Antarctic Continent. The pieces were in great demand during the remainder of the cruise. In the centre of this iceberg was found a pond of most delicious water, over which was a scum of ice about ten inches thick. We obtained from it about five hundred gallons.

"We remained upon this iceberg several hours, and the men amused themselves to their hearts' content in sliding. The pond was three feet deep, extending over an area of an acre, and contained sufficient water for half a dozen ships. The temperature of the water was  $31^{\circ}$ . This island had been undoubtedly turned partly over, and had precisely the same appearance that the icy barrier would have exhibited if it had been turned bottom up and subsequently much worn by storms. There was no doubt that it had been detached from the land which was about eight miles distant."

On the 14th and 15th many icebergs discolored



with earth, stones, etc., were passed, and although the weather was lowering, Wilkes resolved to push on his explorations, hoping that they might join Enderby Land. On the 17th the barrier was seen running north and south as far as the eye could reach, and they were thus cut off from all progress westward. A beautiful aurora borealis was seen that surpassed in its brilliancy of coruscations anything before seen by the explorers.

On the 18th we continued beating to the eastward, and found no end to the apparently interminable barrier. We had a smooth sea, and better weather than I anticipated. At noon, we had retraced our way about forty miles. To-day we again had snow, which fell in the form of regular six-pointed stars. The needles of which these stars were formed were quite distinct, and of regular crystals. The temperature at the time was  $28^{\circ}$ . The barometer stood at  $28^{\circ} 76'$ , about three-tenths lower than we had had it for the last twelve days. The wind was easterly.

"19th.—During the day the barrier trended more to the northeast, and we not unfrequently entered bays so deep as to find ourselves, on reaching the extremity cut off by the barrier, and compelled to return to within a few miles of the place where we had entered. I thought at first that this might have been caused by the tide or current, but repeated trials showed none. Neither did I detect any motion in the floating ice except what was caused by the wind. Our Longitude to-day was  $101^{\circ}$  E., Latitude  $63^{\circ} 2'$  S. Some anxiety seemed to exist among the officers and crew lest we should find ourselves embayed or cut off from the clear sea by a line of barrier. There appeared strong reason for this apprehension, as the smooth sea we had had for several days still continued; we had been sailing as if upon a river, and the water had not assumed its blue color.

"It was, therefore, with great pleasure that, on the 20th, a slight swell was perceived, and the barrier began to trend more to the northward and afterwards again to the westward. In the morning we found ourselves still surrounded by great numbers of ice-islands. After obtaining a tolerably clear space, the day being rather favorable, we sounded with a deep-sea line eight hundred and fifty fathoms. Six's thermometer gave at the surface  $31^{\circ}$  and at the depth named  $35^{\circ}$ , an increase of  $4^{\circ}$ . The current was again tried, but none was found. A white object was visible at eight fathoms. The water had now assumed a bluish cast.

We endeavored to-day to land on an iceberg, but

there was too much sea. Shrimps were in great quantities about it, but swam too deep to be taken. The wind again shifted to the westward, which disappointed me, as I was in hopes of getting to the position where Cook saw the ice in 1773, being now nearly in the same latitude. It was less than one hundred miles to the westward of us; and little doubt can exist that its situation has not materially changed in sixty-seven years.

"The observations of the squadron during this season's Antarctic cruise together with those of the preceding year would seem to confirm the opinion that very little change takes place in the line of ice. It may be inferred that the line of perpetual congelation exists in a lower latitude in some parts of the southern hemisphere than in others. The icy barrier retreats several degrees to the south of the Antarctic Circle to the west of Cape Horn, while to the eastward it in places advances to the northward of that line which is no doubt owing to the situation of the land. From the great quantities of ice to be found drifting in all parts of the ocean in high southern latitudes I am induced to believe that the formation of the ice-islands is much more rapid than is generally supposed. The manner of their formation claimed much of my attention while among them, and I think it may be explained satisfactorily and without difficulty. In the first place, I conceive the ice requires a nucleus whereon the fogs, snow, and rain may congeal and accumulate; this the land affords.

"Accident then separates part of this mass of ice from the land, when it drifts off, and is broken into many pieces, and part of this may again join that which is in progress of formation."

With regard to his discovery of an Antarctic Continent, Captain Wilkes adds:

"The evidence that an extensive continent lies within the icy barrier must have appeared in the account of my proceedings, but will be, I think, more forcibly exhibited by a comparison with the aspect of other lands in the same southern parallel. Palmer's Land, for instance, which is in like manner invested with ice, is so at certain seasons of the year only while at others it is quite clear, because strong currents prevail there which sweep the ice off to the northeast. Along the Antarctic Continent for the whole distance explored, which is upwards of fifteen hundred miles, no open strait is found. The coast, where the ice permitted approach, was found enveloped with a perpendicular barrier, in some cases unbroken for fifty miles. If there was only a chain of islands the outline of the ice would, undoubtedly,





A BURIAL IN THE SNOW.



be of another form; and it is scarcely to be conceived that so long a chain of islands could extend so nearly in the same parallel of latitude. The land has none of the abruptness of termination that the islands of high southern latitudes exhibit; and I am satisfied that it exists in one uninterrupted line of coast, from Ringgold's Knoll, in the east, to Enderby's Land, in the west; that the coast (at the Longitude  $95^{\circ}$  E.) trends to the north, and this will account for the icy barrier existing, with little alteration, where it was seen by Cook in 1773. The vast number of ice-islands conclusively points out that there is some extensive nucleus which retains them in their position; for I can see no reason why the ice should not be disengaged from islands, if they were such as happens in all other cases in like latitudes. The formation of the coast is different from what would be probably found near islands, soundings being obtained in comparatively shoal water; and the color of the water also indicates that it is not like other southern lands, abrupt and precipitous. This cause is sufficient to retain the huge masses of ice by their being attached by their lower surfaces instead of their sides only."

To return to the *Porpoise*. On January 22d, we had lost sight of the *Peacock*, and continued to beat to the southward. On the 30th, she came in sight of

two ships which Ringgold, the commander of the *Porpoise*, thought were the ships of Ross's expedition, and prepared "to cheer the discoverer of the North Magnetic Pole." On approaching them, however, he saw the French flag flying, and concluded that they were the two ships of the French Antarctic expedition, under Captain D'Arville. He closed with him, but when he came within a musket shot, the French ships made sail and displayed no wish for an interview or any communication. Ringgold at once lowered his colors and bore up. Captain Wilkes expresses his surprise that such a cold reception should have been given to his officers; and it certainly was a strange mode of proceeding towards the ships of a friendly nation engaged in a scientific enterprise.

After this attempt to communicate with the French ships, the weather became thick, and D'Arville's vessels were out of sight. Ringgold continued his course till, on February 14th, he reached  $64^{\circ} 15'$  S. and  $100^{\circ}$  E., whence he commenced his return. The *Vincennes* began her journey northward on February 21st, and arrived at Sydney on the 11th of March, where she found the *Peacock* undergoing repairs. The *Porpoise* reached the Auckland Islands on March 7th. With this return the Antarctic portion of Captain Wilkes's narrative ends.

## CHAPTER XVIII.

CAPTAIN SIR JAMES ROSS—1840-1843.

EARLY in 1839, it was announced that the British Government would send out an expedition to the Antarctic seas under Captain Ross. The ships selected for the purpose were the *Erebus* and *Terror*; Ross himself, with R. McCormick, zoölogist, and J. Hooker, botanist, being on the *Erebus*, while Captain Crozier commanded the *Terror*; and on September 24th, both ships set sail from Chatham. There is nothing to record on their voyage to Australia, where they made their final preparations, and set sail from Hobarttown November 12, 1840. On the 23d they landed at one of the Auckland Islands, where some time was spent, and on January 1, 1841, crossed the Antarctic Circle, and in a few days were in the pack. On the 10th, they reached the  $70^{\circ}$  of south Latitude in  $174^{\circ} 43'$

Longitude, and on the 11th land was reported ahead from the crow's nest. McCormick writes:

"This newly discovered land at first appeared very indistinct through a light haze, and a few light clouds skirting the horizon. It was best seen on the port bow where I could just trace the faint outline of a somewhat conical summit of a lofty mountain, having a steep escarpment longitudinally streaked white with snow. After the lapse of about an hour it became so intermingled with the hazy, cloudy horizon, as to give rise to doubts in the minds of some as to its being in reality land at all.

"At 9 A. M., however, when I again saw it, it had become sufficiently well defined and clear in outline to enable me to get a sketch of it. It extended from



S. E. by S. to S. W. by S.; very high, and enveloped in a mantle of snow, except the lower parts of the steep escarpment rising above the sea, and these were black, where not longitudinally streaked with snow; but the range was an entire glaciation beneath a white mantle of snow, relieved only at intervals by the dark apex of some hummock or projecting mountain peak, piercing through the snow-clad mantle. The weather was all that could be desired for giving effect to such a magnificent panorama, as gradually unfolded itself like a dissolving view to our astonished eyes. The sky was clear azure blue, with the most brilliant sunshine; the thermometer at  $31^{\circ}$  with a fresh breeze from the westward. The refraction in the atmosphere caused the land to appear visible at a much greater distance, for we were all day standing in towards it. The northern side, which we were approaching, presented a very remarkable appearance; a cluster of white angular-shaped hummocks or small peaks in the background resembling a vast mass of crystallization, having a steep wall or encarpment of black rock like lava in the foreground next the sea, near which several large icebergs lay aground and evidently had been separated from the barrier, for where the land trended to the southeast a whole line of them were in process of formation and off which a small island with several rocks are grouped, from which a narrow stream of ice extends out to seaward. We tacked ship during the first watch; and at 11 P. M. I got another sketch of the coast. Saw several birds about—a stormy petrel, a gigantic petrel, a white petrel, a pintado, and some penguins. The Latitude at noon was  $71^{\circ} 14' 45''$  and Longitude  $171^{\circ} 15'$ , consequently we are now beyond Captain Cook's Farthest, and have discovered a new land, or so extensive a coastline, attaining such an altitude, as to justify, from its general aspect, the appellation of a "Southern Continent" in the highest latitude within the Antarctic Circle yet known, and we have now but Weddell's track to get beyond."

Next day Captain Ross took possession of an island off the coast, naming it "Possession Island," which they found occupied by myriads of penguins, and after this ceremony had to beat to windward for several days. During this time McCormick took several sketches of the land, with its lofty, magnificent-looking coast line, and lofty peaks majestically towering above the clouds. On the 19th the wind changed, and both ships crowded all sail for the southward in hopes of reaching the new-found territory, but snow and wind again delayed them. On the 25th, a lofty peak, which they called Mount Melbourne, was seen;

it was evidently volcanic, with a perfectly-shaped crater, while beyond it other mountains were visible. Dr. McCormick then continues his narrative in the following terms:

"Thursday, January 28th, we were startled by the most unexpected discovery in this vast region of glaciation, of a stupendous volcanic mountain in a high state of activity. At 10 A.M., upon going on



ROBERT M'CORMICK.

deck, my attention was arrested by what appeared at the moment to be a fine snow drift, driving from the summit of a lofty crater-shaped peak, rising from the centre of an island (apparently) on the starboard bow.

"As we made a nearer approach, however, this apparent snow drift resolved itself into a dense column of black smoke, intermingled with flashes of red flame, emerging from a magnificent volcanic vent, so near the South Pole, and in the very centre of a mighty



mountain range, encased in eternal ice and snow. The peak itself, which rises to the altitude of 12,400 feet above the level of the sea, is situated in the Latitude of  $77^{\circ} 31' S.$ , and in Longitude  $167^{\circ} 1' E.$ , and was named after our ship, Mount Erebus. Adjacent to it, and only separated by a saddle of ice-clad land on its east, arose a sister mountain to the height of 10,900 feet, but now extinct, though having the same general outline. It received the name of Mount Terror, after that of our consort. Its sides were partially covered with snow, presenting the appearance of having been melted in many of the depressions on its sides, and again frozen into pools, glittering like molten metal in the sun's rays, and extending down the sides of the mountain, in a broken serpentine stream to the great wall of ice which extends from its base, forming a point or cape. This sea-wall having a perpendicular face and tabular summit, averages 150 feet in altitude, with caverns hollowed out by the constant action of the waves, producing a remarkable effect of light and shade along its whole margin, which extends in a southeasterly and northwesterly direction, and along which our course lay to the southward, between it and the pack.

"On the starboard beam another small island appeared, bearing south, which received the name of Beaufort Island, after our excellent and talented hydrographer to the admiralty, Sir Francis Beaufort. There was also an appearance of land broad on the port bow. At 5 P. M. I went up to the crow's nest, but could perceive no termination to the great ice-wall, which we have named the Great Southern Barrier, and barring our way to the pole. We are shaping a N. W. course along it, distant, perhaps, three or four leagues. A number of white petrel, and now and then a solitary lestris of predatory habits, like its congener, the Skua gull of the north, have been the companions of our voyage for the last few days. Weather very fine and clear, thermometer  $29^{\circ}$ ; wind S. W.; Latitude,  $76^{\circ} 57'$ ; Longitude,  $169^{\circ} 24' 50'' E.$ ; ship under studding and topgallant sails.

"Yesterday, the 30th, we ran parallel with the barrier, but to-day a change in the wind, and the weather becoming thick and gloomy, with a fall of small snow, compelled us to stand to the northward, and to relinquish, for the present, the following up the course of the barrier. There was neither land nor ice in sight to-day; thermometer,  $28^{\circ}$ ; Latitude,  $77^{\circ} 35' D. R.$ ; Longitude,  $181^{\circ} 20'$ . We have followed this lofty barrier of steep and perpendicular ice-cliffs, varying in height from 100 or 150 to 200 and 300 feet, for upwards of a hundred miles. The depth, 410

fathoms; the lead in sounding sank at least two feet in soft green mud, seemed to indicate that the outer edge of the barrier could not be attached to the bottom, but must be borne upward by the water. The high land forming the background of the barrier being the southernmost known land, was named after our worthy old Arctic chief, Sir Edward Parry, the Parry Mountains."

The following days were bright and the sea smooth, but the cold increased, as they ran along the ice-barrier for at least 160 miles, passing a whole chain of table-topped bergs, shed from the barrier itself and 200 miles from its origin at Cape Crozier. "The wondrous scene nature has unfolded here, even beyond what might have been anticipated in this land of wonderment, has had the effect of riveting me to the deck for the last twenty-four hours, a volunteer and most willing sharer in the duties of every officer during that period. Last night, after sounding in 275 fathoms green mud, the barrier at midnight was seven miles distant, its extremes bearing from S. E. to N.  $\frac{1}{2}$  W., and the line of the pack-ice from S. W.  $\frac{1}{2}$  S. to N. N. W.  $\frac{1}{2}$  W. Being myself most anxious to trace this mighty wall of ice continuously without a break so as to see all I could of it, I never turned in at all, but kept the deck throughout the night, a night never to be effaced from memory's tablet to the latest hour of existence; and well was I rewarded for the temporary sacrifice of a night's rest and sleep by the grand and sublime panorama which was unfolded to and arrested my gaze like some striking, shifting scene on the stage, as the 'noonday' night of this high latitude wore on, and scene succeeded scene in nature's unrivalled display of her great Creator's works.

"The night, so-called, although, in fact, day here, was, indeed, most favorable, being remarkably fine, the azure blue of the sky above was mottled over with curdled white, like cumuli, a mackerel sky in short. To windward the moon's pale silvery disc every now and then emerged from beneath the clouds on the port beam, whilst the brighter rays from the glorious sun clearly indicated its position behind a bank of cirro-stratus on the starboard beam to leeward. We were sailing along a channel bounded on the starboard by the barrier, and on the port side by the heavy pack, passing through a quantity of young ice in streams varying in breadth, their outlines marked by a deeper shade of color than the surrounding water. Each piece of ice assumed what we called the pancake ice, in form and size, having the margin slightly elevated and turned up, the pieces thickly packed together, some streams consisting of larger



and more irregular-shaped masses, oblong, oval, and of irregular, hexagonal figures, from a foot to three or four feet in diameter, lined as if from several smaller ones having become cemented together."

On February 9th, McCormick says :

"At 5.40 A.M. the break in the barrier was visible, forming an inlet, or bight, perhaps a quarter of a mile wide, and from a mile to two miles in depth, bounded on its starboard side by a very strikingly bold promontory of ice, for which we had been for some time standing in, and now went about when within a

sented to the barrier, Captain Ross got soundings at 330 fathoms, and again at 6.15 A.M., in 318 fathoms, green mud as usual, whilst standing off. The only spot where the upper surface of the barrier could be seen was at the further extremity of the bight, the cliffs of ice forming the sides, sloping down to a low angle, where they meet, and above which the upper plain surface rose like a smooth, snow-clad, swelling hill in the distant background. The enormous icicles suspended from the basal portions of the steep mural precipices forming the portal and promontory to this



MOUNTS EREBUS AND TERROR,

quarter of a mile of it, with a moderate breeze blowing. We had tacked none too soon, for its great height above our mastheads, even at this distance, took the wind out of our sails as we hung in stays. Captain Ross, coming on deck at the moment, rated the lieutenant in charge of the watch for venturing so near before putting the ship about. But conscience forbids my letting him bear all the blame for this bit of daring, the temptation to have a nearer view into this extraordinary recess in the barrier having prompted it. When the good old ship's stern had been pre-

great inlet in the southern barrier, had a most imposing and striking effect as the old *Erebus*, when nearest to it, turned her stern toward it, after getting her head round. The whole scene was one calculated to inspire no less awe and wonder than that of Mount Erebus itself, ejecting smoke and flame from the summit of its stupendous peak of thick-ribbed eternal ice and snow."

On the 10th the weather became more wintry, but winds were light, and on the 16th the explorers saw the great volcano, Mount Erebus, sending forth a



dense volume of smoke, in the lower portion of which a red flame might be seen. It was ascertained not to be an island, as had been supposed at first, but united to Mount Terror and the mainland, from which it was parted by a deep bay.

"I remained on deck," McCormick continues, "a not unusual circumstance with me, all night; and at 10.30 P.M. I saw the sun set for the first time; the wane, forming a slender crescent. During the first watch Mount Erebus presented a splendid spectacle, sending upwards a tall, dense column of smoke, tinted red on the right side and extending out in that direction in an oblique line of pale red along the sky, a smaller vent appearing on the first eminence to the right of the crater, ultimately a bank of dark clouds of a deep neutral tint color, surmounted by a reddish flush, with foam-like edges, screened the mountain; the volume of flame-tinted smoke curling just above this stratum of clouds to the right disappeared altogether about 1 P.M."

On February 18th they made their nearest approach to the Magnetic Pole, but all hope of nearing the Pole was abandoned for the season.

The result of this year's work may be briefly stated as the discovery of an Antarctic Continent, which was traced from 70° to 79° of latitude till this great icy barrier, commencing at the terminal cape of Mount Terror, extended its unbroken length for over two hundred and fifty miles, arresting all progress southward. Behind the barrier were named the Parry Mountains, and to an island near was given the name of Franklin, after Sir John Franklin.

After spending the summer in various visits to the Pacific Ocean, to New Zealand, and elsewhere, Captain Ross prepared for his second attempt to penetrate the great mystery of the south. On December 16th the first berg was seen, and two days afterwards they were in the pack. January 1, 1842, was ushered in with fine weather, and the 3d the ships were closely beset, and for the next fortnight they were either boring through the ice or else beating about in pools of water. There was little to break the monotony of their daily life during most of this time. The crews of the ships visited each other, and some seals and penguins were caught. But on January 20th they were destined to witness one of the most extraordinary sights in the annals of navigation, which is thus described by McCormick:

"We encountered a heavy gale of wind, little short of a West India hurricane in its force, whilst beset in in this vast and close pack of ice. It was a heaving sea, with a long swell, unprecedented in the Antarctic

seas. Each mountain wave was crested, not by spray and foam, but bore on its summit huge masses of solid ice, hard as adamant, intermingled with brash and *débris*, resulting from the tremendous collision of ice with ice in the combined tumult of waters, both fluid and solid; and notwithstanding the enormous pressure of the ice borne on their surface, some of these waves ran so high as to render the *Terror's* main topsail yard barely visible above them, when she fell into the trough between two of them, scarcely half a mile ahead of us.

"Both ships had been rolling heavily all through the preceding night, coming so violently in collision with the ice as to shake their whole framework in such a way as to render it doubtful whether their timbers, strongly put together as they were, could much longer resist the fearful strain on them. The swell appeared to come from the W. N. W., and the ships drift to S. by E. The *Terror* was under her main topsail on the cap. We were limited to the main trysail and fore staysail, backing and filling as requisite, to clear the heavier pieces of ice, or by lowering the fore staysail and squaring the main yard to drop astern of them. Then, again, forging ahead by dropping the fore sail, etc., the main topsail hanging loose upon the cap. Barometer at 2 P. M. 28° 49'. We passed perilously close to some enormous hard masses, having white table-topped summits ten to twelve feet above the surface of the sea having a horizontal hollow line, in their perpendicular sides, reflecting a beautiful cobalt-blue color, and vertically streaked with an appendage of white pendent icicles, apparently resting on older ice as a basis, having a pale, yellowish-brown color at the water's edge, divided by short pillars. Beneath the surface of the water large tongues of ice, having a convex upper surface, and smooth, blue appearance, hard as the granite rock itself, stretched out far beyond, on which the roaring surf broke. Were a ship's bottom—her weakest part—to strike on this, no human power could possibly preserve her from instant destruction in a sea like this, with such a hurricane raging around. We, indeed, passed in very close proximity to one mass of a rounded, hard, washed, blue appearance, pitching as it were, bows under, like a ship going down in the turmoil of waters raging around.

"Fortunately for us there were none of the large bergs in our line of drift, and only two far to leeward. Two poor seals were quietly sleeping on a piece of ice ahead, apparently, if not unconscious, indifferent to the turbulent scene of the elements around them.



A solitary black and brown, and a white petrel or two were now and then seen hovering overhead in the height of the gale. The sky itself presented one uniform, lurid, leaden color; the wind was from the N. N. W., and the barometer falling all day; snow in large flakes fell at intervals, and in the afternoon the weather became thicker with fog. At 12.30 we drifted into a lane of open water. During the last dog-watch the wind shifted around to the westward, and the gale and swell both became much abated.

"We had our rudder, injured, and on exchanging signals with the *Terror*, learnt that hers was in a much worse condition than our own; made the signal to rendezvous at the Falkland Islands, in the event of parting company. The *Terror*, as she rose on a sea showed her copper sheathing, very bright and polished from the scrubbing it had sustained in her late collision with the ice.

"At 7 P. M. we passed a very beautiful young seal of the large dark kind, reposing on a piece of ice not ten yards from the port side of the ship. He was four or five feet in length, blackish-brown above, hair short and thick, crisp looking underneath, gray, mottled with black both on flanks and flippers. The poor animal seemed much astonished at his close proximity to the ship, looking round him with a bewildered expression, which was soon converted into fear and dread by the laughing and noise on deck, and at once set about crawling off the ice, propelling himself along on his chest, without making any use of his flippers, progressing by curving in his spine, thus shortening in his body as a caterpillar would do, the hind or tail flipper being vertically closed, and passively stretched out on the ice. On rolling off the ice into the sludge, he then made use of his fore flippers in endeavoring to get upon another piece of ice, but being unsuccessful he rolled over on his back and disappeared."

On February 12th, they passed "Cook's Furthest," in Longitude  $170^{\circ} 13' E.$ , and on the 22d came in sight of their old friend the Great Barrier, and on the 23d hove-to about two miles from a

promontory in it, and took soundings in 290 fathoms.

"Whilst the line was running out, I seated myself." Mr. McCormick relates, "in the stern-sheets of the boat, on the port side of the quarterdeck, to take a sketch of one of the most novel and extraordinary scenes I, or anyone else, ever witnessed. The day was cloudless, a bright sun, in a clear, blue sky, the rays of which, falling on the barrier, gave a beautiful effect to its steep, indented sides, the various angles and abutments of which stood boldly out in relief, alternately in light and shade, forming a long, zigzag,



QUARTERS ON THE ICE-FIELDS.

perpendicular wall of ice, upwards of 100 feet in height, extending from S. 40 W. to N. 21 W. Along its base numerous fragments of ice, of every form and size, were scattered or piled together in the wildest confusion, in many places appearing as if quarried out, leaving recesses in these stupendous cliffs, hollowed out by the terrific power of those heavy seas which gales of winds have set in motion when sweeping over the vast and mighty surface of the southern ocean, the sea in front of the barrier being covered with ice of the pancake pattern, and amongst which the ship was hove-to. The extreme of the barrier to



the right had the horizon studded with bergs, both large and small, resembling, as the sun's light fell upon them, so many white marble buildings in the distance. To the left a huge berg had posted itself in solitary grandeur in front of the barrier, inside of which we passed at 7.15 P.M. In again making sail, we ran along the latter at about a league distant, forcing our way through vast quantities of thick, pancake ice, which became thinner and thinner as we increased our distanced. Saw two or three small penguins on it, rising and falling with its waving motion.

"Just as we had made sail, our consort, the *Terror*, which we had run nearly hull down, came up with us, and went about close under our stern. Our Latitude here was  $78^{\circ} 7'$ , the *Terror* making it  $78^{\circ} 9'$ , so that taking the mean of the two observations, would place the face of the barrier in  $78^{\circ} 8'$ , Long.  $161^{\circ} 27'$ , and that we have attained about some half a dozen miles higher latitude than last season, our further progress towards the Pole being checked by the barrier. About 130 miles further to the eastward the summit of the barrier could be seen from the masthead looking like a vast plain of ice in one direction having much the appearance of land in the distance."

On the 12th of March the two ships came into collision, and the *Terror* carried away the bowsprit and fore topmast of the *Erebus*, while a stupendous iceberg loomed in terrific grandeur high over their masts. The *Erebus* with her head sails a *cumbrous* wreck was drifting in the surf that raged around the base of the berg, and nothing but the under-tow saved her from being dashed to pieces against its hard blue sides, till the delicate manœuvre of a steamboat was successfully executed. At this time they were in Latitude  $60^{\circ} 12' S.$ ; and on the 23d sighted Beauchevé Island, after having been out of sight of land for 136 days.

So ended Ross's second attempt.

On December 17, 1842, the *Erebus* and *Terror* weighed from East Falkland Island for the third and last time, and on the 24th met their first iceberg. On the 28th, they sighted Louis Philippe Land.

It appeared from the deck and ahead, a bank of misty clouds suspended over it, which rendered its outline, clad as it was in one dense wreath of snow, very indistinct. About a league from its eastern extremity a snow-clad islet appeared resembling a berg on the distant horizon. They were now really encompassed by bergs, some of them of huge magnitude, and in every direction around the horizon.

As they ran along the land about 8 P.M., it had the appearance of one vast, continuous bank of snow;

perfectly smooth in outline as a snow-wreath everywhere, save where it showed the action of the waves, at the margin of the sea, where bergs had been separated from it. From the centre it gradually sloped down to a point, running out very low and long to either extremity of the island. In one bearing only could a particle of the land itself be seen, and that was at the highest elevation of the ridge, appearing like two very small oval hummocks close together.

As they neared the southern extremity, five black-looking, small, low islands formed a chain at various distances from the low point, and in the midst of a labyrinth of bergs; some of these so darkly shaded as to be with difficulty distinguished from the islands themselves at a distance.

They passed the last of them, distant some six or seven miles, at midnight. The highest part of the mainland was estimated at 2,000 feet, and they passed within about three leagues of it. Many whales were spouting, and there was a seal on the top of a berg, also a *chionis* and a *lestris*. Penguins were cawing and quacking in all directions, sometimes jumping out of the water like skip-jacks, and moving along in a line or single file like fish. On one berg McCormick noticed upwards of 100 collected on the summit.

They were not able on this, as on the previous voyages, to cross the Antarctic Circle on New Year's Day, of 1843, but were still between Louis Philippe Land and the dense ice-pack. Jouvillé Land and Pyramidal Island were not far off. During the rest of the month little progress was made, but on February 14th they reached their highest Latitude,  $65^{\circ} 6'$ , in Longitude  $41^{\circ} 51'$ , and the 18th completed the circumnavigation of the globe. On March 1st they crossed the Antarctic Circle, too late for much work, but, as usual, within the charmed circle the weather was fine, the sky blue and cloudless, and the sun bright, and a magnificent sunset greeted them on their arrival.

Both cutters were lowered at 1 P.M., and the two captains left their ships to superintend the deep soundings. After running about 4,000 fathoms of line off the reel, which occupied an hour and fifty minutes, no bottom was obtained, and 250 fathoms of one inch, and 3,750 fathoms of three-quarter inch, with a pig of ballast was expended. The current ran  $0^{\circ} 3'$  per hour. Whilst the boats were away sounding the doctor shot a blue petrel from the ship's deck, but it fell into the sea, drifted astern, and was lost, which was vexatious, for this was the first bird of the kind shot throughout the whole period of the expedition. They are never met with on the ice-pack. Several whales were seen, but birds were very scarce.



"Saturday, 4th, gloomy day, but wind fair for the south; yet we are shaping a southwesterly course to avoid the track of our enterprising predecessor, Weddell. This prejudice on the part of the commander of the expedition is to be deplored; but from the first there has been a disposition not to follow in the track of others, which, together with having frittered away the best part of the season in the vain effort to force a passage between the perilous chain of stranded bergs, and the broken land of Louis Phillipe, mainly for the sake of a display of some new land of a trifling character on the chart, cost us the season, and ultimately proved fatal to our attaining even so high a latitude as that of Weddell himself; apart from the daily risk to the ships, knocking about for weeks together in narrow channels and pools of water, beset with strong currents, pent up between a chain of grounded bergs, and a most dangerous coast. Indeed, I believe there were few on board either of the ships, if they candidly expressed an opinion, ever entertained the shadow of a hope that we could ever make our way further south through the inextricable difficulties of a course so ill-advisedly adopted, and so pertinaciously followed up in this, our last attempt, to reach the South Pole."

On the 5th the ships bore up on their final departure from the ice regions where they had now passed three seasons; on the 11th they recrossed the Antarctic Circle and shaped their course for the Cape of Good Hope.

Dr. McCormick, the zoölogist of the expedition, thus sums up the results of this third attempt to search the Antarctic Pole:

"I can only repeat my own conviction that our main want of success too evidently rested with the course we had been so unfortunate to adopt, rather than follow in the wake of Weddell, who had, with limited means at his disposal, attained the high latitude of 74°, with a fine open sea, free from ice as far as the eye could reach in the horizon view; and had not the interests of his owners in his small vessels, ostensibly employed in the seal fishery, hampered him with responsibility, he might probably have made a much nearer approach to the Pole. His meridian was 40° ours 55° W., the meridian of Cape Horn, on

which we made the attempt, along a very intricate navigation of the shores of that group of islands, called in the charts South Shetlands, barren islands and rocks flanked by tiers of huge icebergs aground between which and this forbidding, desolate, ironbound, coast, rapid currents ran like a race through the narrow and often tortuous channels, with which, together with tempestuous gales, amid snow-storms, sleet, and fogs, both ships had to buffet for so many weeks, in the vain hope of forcing a passage through to a higher latitude, and the temptation offered for this adding perhaps some few new lands to the chart. But after all our efforts the short navigable season closed upon us and we were no nearer the Pole than on the day on which we first made the ill-omened land.

"A hopeless attempt was at last made to get upon the track of Weddell, which, from the lateness of the season and unfavorable winds, was now so encumbered with vast drifting packs of ice, amid dense fogs and gales, that it barred our course, and precluded all chance of even attaining the latitude of our predecessor, and with no small difficulty that of Captain Cook in 71°, when we had to bear up and bid a final adieu to Antarctic lands, packs, bergs, and seas.

"Happily for us, the attempt in our first voyage south was rewarded by the discovery of a mighty southern continent, dwarfing the quarters of the Old World, and rivalling the new one in its stupendous magnitude and general aspect, capping the Pole by lofty mountain ranges, sustaining altitudes varying from 5,000 to upwards of 12,000 feet; two magnificent volcanoes crowning all, arrayed in an armor of everlasting ice; a glaciation as complete as ever occurred to the opposite hemisphere in ages past. The perpetual snow line descends to the very beach. The constant presence of ice and snow keeps the thermometer at the freezing point; consequently no kind of vegetation exists, not even a seaweed, on its barren shores; and, but for the animal life which animates the ocean, whales, seals, penguins, etc., and sea birds, winging their way through the air, or skimming the ice-embossed surface of the deep all would be as desolate and silent as the tomb."



RD 247





















DOBBS BROS.  
LIBRARY BINDING

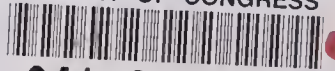
ST. AUGUSTINE  
FLA.



32084



LIBRARY OF CONGRESS



0 041 303 342 1